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Dream House

The *Old House* magazine commissions one of America's greatest house architects, Robert A. M. Stern, to design a house that's old, familiar and warm on the outside but thoroughly modern on the inside.

By JACQUIE KALLER

P. 26



FEATURES

An American Craftsman

For Christie Kaller, a Macintosh with a P.D. in anthropology, thinking is doing. At the *Old House* meeting, Kaller "thinks first"—proving that there's more to working with than looking, hammering and bending.

By WENDY HARRINGTON

Big Chiller

Evaporator coils—or "vees"—may be low-tech, old-fashioned and dirty, but every home owner on the West Coast who they do is electricity bills during peak air-conditioner season.

By JIM MCCLELLAND

Amazing Grace

The *Old House* master carpenter Naven Adams and the T.O.U.L. team wrap up the winter TV project, converting a San Francisco church into a spacious house that's cozy enough for two newbunks.

By BRAD LORLEY

Mulch Makers

Chipper shredders gobble bark, branches and bushes, then transform them into gardeners' gold—mulch. A cross between a food processor and a truck compressor, they are the perfect solution for piles of fall leaves.

By WILLIAM C. SCHULTZ

Building a Safe Deck

A deck can handle even the roughest gang of fraternity brothers as long as the beam that carries the floor joists is properly bolted to the side of the house. Under bolts, nails can pull out—and without warning.

By CHARLIE BOLT

The Poster: Rope

For years, rope consisted of natural fibers twisted together. Today, synthetic—and stronger—fibers predominate. This handy guide not only shows how to tie the three knots that everyone should know but also charts a course through the complicated new offerings of leg-kick lines.

By JILL CONNORS

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COVER: MIKE THOMAS FOR LARSEN; LEFT: LARRY BOLT; RIGHT: MIKE THOMAS FOR LARSEN; SAN FRANCISCO: CHRISTOPHER WARD; PHOTOGRAPH BY BOB FILLMORE; BOB FILLMORE, B. FILLMORE



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Water Torture

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BY BRUCE TAYLOR

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FROM THE REMODELING PROJECT: P. 50



From the home of Jack Daniel's, we're pulling out a few. We say this way from now on.

THIEVES AND SCOUNDRELS used this Tennessee limestone cave as a hideout. We believe it serves a nobler purpose today.

This cave, and the natural spring in it, can be found at Jack Daniel Distillery. And every drop of water we use to make our Tennessee Whiskey comes from right here. You see, it's ironfree, and iron is the enemy of good whiskey. There are plenty of fine hiding places in these parts. But after a sip of Jack Daniel's, you'll know why we're so partial to this one.

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MARY ELLEN MARK speaks, comments, has led her photography the poor and homeless of Chicago as well as the rich and famous of Beverly Hills. Her photographs are appearing in the traveling exhibit "India: A Celebration of Independence," the December issue and January 1 also contributed to the Academy Award-nominated 1984 documentary *Baran*. For the *American Civil War* (issue 43), Mark examined Abraham Lincoln's character, partly by looking at his hands. "They were very strong," she says. "By the end of the day they were black. You could see the scar in the line of his palm." Readers can find more of Mark's work in her 30 books, the most recent of them is *A Cry for Help: Stories of Homelessness and Hope* (Simon & Schuster, 2004).



"I've got branches lying where they fell five years ago," says **WILLIAM SCHILLER**, who wrote "Black Indians" (page 54). "Now I know how to get rid of them." Schiller cradled smooch-shaped children on his 34-acre property in Waterville, Vermont, and believes that way of life could easily substitute for a Vermont govt. Schiller has spent his career writing about nature and travel. With his wife, Kay, he wrote the New England volume of *National Geographic's Doing Good to America* (2002), and he has contributed to *Arden*, *National Geographic Traveler*, *Yankee* and the *Washington Post Magazine*.

ERIC O'CONNELL, who photographed "Big Chiles" (page 42), grew up in and Allapong, New Mexico, where every coffeehouse is traditional for coffeehouses are the favored method of lighting heat. "They're efficient and cost practically nothing to run," O'Connell says. "Just some water and a little electricity." Also a connoisseur of fresh air, O'Connell likes to climb mountains, hike rivers. In 1991, he won the New Mexico Off Road Series. His photographs have appeared in *Outside*, *Prevention* and *Family Life*.



Interviewing architect Robert A.M. Stern for her stories about T.O.H. magazine's new design home, writer and architect in Wilton, Connecticut (starting on page 74), **JENNY ALLEN** discussed that Stern's priorities extend beyond simply looking design. "He cared about the lives of the neighborhood," she says. "He's spreading the movement away from style and experiences and back to life development." A resident of Manhattan, Allen spends summers at a shaggy cottage on Martha's Vineyard, Massachusetts, with her husband, musician Jack Perley, and their two children.

HELP

LETTERS TO THE EDITOR

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respirators

Working on an old house can stir up mold spores, create clouds of drywall dust and fill rooms with paint fumes. Outside, even environmentally aware residents such as detox-conscious earth-conscious health problem if inhaled. Using a respirator is wise. In the three years since This GM House magazine reported on breathing gear, manufacturers have been preparing to meet new standards from the National Institute of Occupational Safety and Health for respirators with filters that trap any particles. The federal agency has not changed its standards for the other type of home use respirator—masks with specialized cartridges that absorb toxic gases.

Under the new rules, particulate respirators made after July 30 of this year must be classified into one of three categories, depending on whether the filter would be rated by only dusts. The three categories are N, for filters not resistant to oil, R, for oil-resistant filters good for only one week, and P, for "oil proof" filters, which have a longer service life. Each of these categories has its own efficiency levels.

Unfortunately, the latter categories do little to help casual users who go into home centers and try to figure out which mask they need. Our experience while shopping for products to use in our own houses indicates that the selection of masks available shows how to use them have not improved. Recently, when we asked to see masks for a respirator to wear while using con-



Enjoy a clear mask? Look for the NIOSH label and two rubber bands.

crete with a rotary cleaner that releases a fine dust, the clerk pointed us toward masks labeled, since they only remove particles, then to masks with organic vapor cartridges (also useless). When we asked for something to protect against oil, the clerk responded: "What's wrong, you don't like the oil?"

Russ King, respiratory safety manager at 3M, a major manufacturer, explains the confusion: "If you determine whether the hazard is any particles in the air (dusts) or toxic vapors (gases), that's all there is to it. Generally, dry facilities use a particulate respirator. Organic solvents released in the air are part of the issue and paperlike disposable filters with two elastic bands and the words 'NIOSH approved respirator' on the label. The rubber-type style better but may be harder to find. Labels such as 'fine particulate respirator' or 'drywall dust respirator' are marketing terms; the masks are interchangeable. Avoid disposable filters labeled 'respirator mask' or 'for customer use.' These masks, usually with a single elastic band, don't seal well against the face. 'We've tested some that run only 5 percent efficient,' says Bill Hoffman, a respiratory scientist at NIOSH's respirator program.

For vapors, the gas mask isn't practical. Usually, this means buying a rubber mask with interchangeable cartridges capable of absorbing organic vapors, acidic gases, formaldehyde, isocyanates or other hazardous materials. To ensure the right mask, Hoffman suggests looking at whatever cartridge-type respirator the store sells and calling the manufacturer's technical advice number, which NIOSH requires on all approved respirators. "We've tried these numbers, and the people give the right answers," Hoffman says.

King says most home owners don't realize that no respirator filters are available for sale, common in paint stores, or accessories, found in some paint stores. For these, the only protection is a respirator that pays in fresh air, available in some rental equipment companies. One, or two, wearing. Guys with heads gas tanks by wearing respirators that cover only part of their face. "They need one with a helmet or a hood," King says.

—Joanne Miller

House

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Of Mice Born

Thank you for the environmentally conscious article "The Best Lease" in the May 1998 issue. It is refreshing to see that your magazine's modern technological tips and sophisticated craftsmanship are joined with sensible guidelines that can protect our own health and that of our planet. In the long run, it will be much easier for folks to maintain naturally self-sustaining living conditions than to buy a professional home enclosure and are new at the eco-stuff. The following is your magazine to be a source of information on how I might include myself about the little things I can do to bring the concept of sustainability into my work and personal life.

Wesley Sweeney, Chapel Hill, NC

The Extramural?

I have been a viewer of *This Old House* for many years and have noticed one old houses in the last 25 years. The vast majority of the episode show houses and refurbishing that cost far beyond the reach of the average American pocketbook. Most episodes look more like *Lifestyles of the Rich and Famous* than like a guide to restoring an old house. The May 1998 issue of *TOH* shows a \$100,000 renovation of a house ("Media Blitz") and a \$200,000 basement garage ("Park Place"). Please show average middle-class homeowners how they really can achieve a well-priced-out-of-the-way and if a total loss then that of a contracted well job.

SA Rimes, Seattle-Grain, Wash.

The Old House division undertakes large-scale projects to avoid happen from site to site for similar jobs, they would need to offer WGBH TV's production costs. "Think of each project as a one-off," says *TOH* producer Bruce Irving. "We're not talking you to run the whole thing just to see what you want." The show properly seeks out the highest quality craftsmanship and building materials, which is the long-term cost the better. Money, money, money, money to ensure you don't lose money. With this attitude in mind, we produced the ultimate media room—although it cost nowhere near \$1 million—and offered advice to help home owners scale down the system to fit their own budgets. ("Media Blitz" writer Chris Rat will offer additional fine advice

to readers on this subject, send E-mail to craft@home.com.) And although \$30,000 may sound like a lot of money to park your car in San Francisco, that parking place added \$100,000 in value to the house. The cost of building a new attached garage in that city could have been as much as \$40,000. The remodeling budget for *TOH* projects leaves quickly falls into the \$10,000 to \$50,000 area, the San Francisco home came in at the high end of that range. Most of the projects cost that or less. Others who have not recently taken on a do-it-yourself project might be surprised to learn how materials prices have risen—just as he was the other day when he went on a price run: "Two gallons for \$55, each."

Noted In

I enjoy your articles on tools and construction equipment and look forward to reading the magazine as soon as it arrives. I was wondering: Why does Tom Silva carry two tape measures all the time?

Jon Perinacci, Lakewood, Calif.

TOH contractor Tom Silva says he carries one tape measure on his tool belt and one on his regular belt because he is always measuring up jobs but not always measuring his tool belt.

The Snaggle

I enjoyed Sebastian Junger's piece on two men ("Out on a Limb," March/April 1998). Drop-it-yourselfers would be wise to heed his advice on protective gear and keeping one's head up. We just brood an experienced 40-year-old logger who died in his car's arms after being thrown by a falling limb. They don't call dead branches "widow makers" for nothing.

Jon Olinowski, Seabrook, ME



Make It More and More

To my delight, I discovered the moving article about Sam Mabel ("Woodworker") in my March/April 1998 copy of *This Old House*.

In the late 1950s and early 1960s, when I served as clerk of the choir or design committee of a church in Woodstock, California, a local artist referred me to Sam. At our request, Sam worked, for his first time, in carpentry. He designed the pews to match his shagbark hickory church chairs and inspiring pulpits. It was probably the most inspiring and satisfying creative experience I have ever known. I am pleased that Sam and Alana are still only busy on their lovely life style.

MICHAEL M. LUNA, Davis, Calif.

You mentioned Sam Mabel's love of growing different types of trees. I also do fine wood-working and would love most of my lumber from trees destined for firewood. Like the live oak my kids used to play in that came down in a snowstorm of the winter, one that was cleared to make room for a parking lot. The what happened to the trees that Sam grew at his old place? Lumber with a story makes furniture much more interesting.

Rose Brown, Somerset, Calif.

Although Sam Mabel will be in to inspect his house in seven or eight years, he is now busy, he grew past woods, a system and a dozen more will remain more on the site, spread from the surrounding highway. Mabel will leave them there for the next decade, they lead to his beloved property. But he will harvest the wood from his old house, once which construction work will fill—for his workshop.



Time Is My Friend

My spouse and I decided to fix up a neglected space in our house. When I told the contractor how we wanted the windows trimmed—picture-framed with 1 1/4 board, no casings or, otherwise, molding—he understood but thought it would look too plain. About one month after the job was complete, I saw the cover of *DOH* featuring Sam's workshop (November/December 1997). Let me just say Sam has great taste in film and

is in line with the cutting edge in classy structural home design.

Burton B. Auer, Upper Merion, Pa.

Plastic Pipe

In the January/February 1995 issue, page 88 ("Thinker Inexpensive") shows a 1½-inch cross-linked polyethylene pipe installed in an insulating jacket for an underground hot-water system. When is this installed system on the market, and is it a do-it-yourself project? I like the contents of this issue and get pleasure from its new reports, which we hope to build this year.

Robert D.A. Tancos, Langley, B.C.

The installed polyethylene pipe was also featured in *The Old House's* spring 1996 special, *Reinventing the Bath in the Old House*, in Milos, Massachusetts. "Laying the pipe isn't really hard," says T.G.H. plumbing and heating contractor Jack of Tewksbury. "One making a worthwhile connection that will last a lifetime is a job for a professional." (See Directory for product information.)

Point-on Protection

My wife and I are having a new home built. In the process of selecting a contractor, we learned several construction sites and noticed that all of the buildings were unprotected—with serious amounts of construction debris on them. The contractors said it was a problem but they did not know of any protective covering other than a heavy dust-sheet that can trap hidden dirt and cause staining. Do you know of any product on the market that we can pass along to our builder? After paying a lot of money for a custom job, we don't want it scratched or dented.

James Neeson, East Moline, Ill.

Before installing a clear board or other free-standing tarp, it's customary to break the rest of the bathroom completely. For beds, use a commercial construction tarp or a cover. Mask or heavy cloth over the tub to just over the sides. Also, you might try a new, point-on covering that can be pulled all while construction runs. The explanation claims that the covering spreads impact rather than damage from debris, is easy to use and pro-

tect completely (See Directory for product information.)

Checking It Twice

I have written in electrical power stations for 40 years and have checked many circuits in order to provide a safe working condition for others. I would like to point out a safety hazard that I see in demonstrations on many home-improvement shows. When making a check for power on a normally grounded circuit, you should first check the tester on a metal you know to be hot, second check the wire to be worked on, and finally double-check the tester on the first object to be sure it is still working. Also, always know the voltage level rating of the tester.

James D. Moss, Southern Heights, Ill.

From Plastic Trees

Do you know of a source for plastic bats, tails or patch appliques?

Don Williams, Milwaukee, Wis.

In "Treated Wood" in our May/June 1995 issue, we showed a waterproof boardwalk

made with both fiberglass-reinforced plastic "lumber" and plastic wood composite decking. You can purchase decorative polyurethane finishes or polyurethane balusters and pickers from a number of manufacturers. (See this issue's Directory for information on all these products.)

Hide Your Hinges

Your magazine and TV programs have brought great pleasure to me. Even though I do not reside in an old house, I benefit from the information regarding new products, new methods of construction and the expertise of the authors. In reference to the work done on the old church in San Francisco, I question the advisability of placing the hinges of outside (bracket) doors on the exterior of the house. The beautiful looking door was installed on the inside house's door (I think) which would not prove to be much of an obstacle to an intruder (I like the idea of double doors that open out rather than into the house, but surely it is not

the better way to hide the hinges).

Tom Jones, Arcadia, N.Y.

Master carpenter Norm Adams replies: The general consensus at *The Old House* is that swinging doors are usually not the best choice for a traditional building, primarily because of their tendency to deteriorate quickly with excessive weather wear. As for safety, however, a properly fitted door with self-closing hinges can be very heavy for a would-be burglar to tamper with. For even greater security, there are hinges that are designed specifically for use coming down and have heavy pins that are virtually impossible to remove. The self-closing doors on the San Francisco house were attached with lightly tapered hinges to ensure security. They also work well for their original purpose: to give large groups of people access based on the use of an emergency

Glenn's Board

Visit March/April 1995 article on pressure-

treated wood ("Archie and Old Wood") was timely. My husband and I wanted to build a wooden shelter for our 5-year-old son but were not motivated that the standard pressure-treated wood was safe. On the other hand, we weren't sure we wanted to make an investment in redwood or cedar. We contacted several suppliers listed in the *The Old House* article and found a source of safe treated lumber in Escanaba, Michigan. The lumber was delivered to our home last week.

Susan Brown, Arcadia, Mich.

punch list

editorial: audit of items incorrectly shown or mentioned in a construction job

March/April 1995

• "Plastic Trees" (Items, page 88) incorrectly shows the plastic trees in the photograph as being made of plastic. The photograph shows a plastic tree made of plastic.

May 1995

• The "Old House" Directory listing page 130 gives an incorrect phone number for the National Garden and Earth Association. The correct number is 800-943-4111. In "Treated Wood" on page 83, the photo is credited to the BCI-squad construction and the photo is not.

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OFF THE WALL

BY JEANNE MARIE LASKAR



APPLIANCE BOOT CAMP

"Yes, we have nasty lint buildup, sir!"

A

poster on a wall inside a place known as Sears Boot Camp reads, "Some- where in America someone is counting on you today." I think: That is so true. Because I am an American. I am an American with an appliance headache.

I am also a mere civilian, but I've been invited to spend the day here at Sears Boot Camp, a training ground outside Chicago for troops dedicated to keeping America's appliances running.

Duff Maynard, manager of the place, is turning me around. He has short hair like a drill sergeant, but the smile of a man schooled in customer satisfaction. He tells me that every second of every workday, two home appliances are repaired by one of the more than 14,000 Sears technicians trained right here. They fix all 98 major brands of appliances on the market, not just the load you buy at Sears. The techs get blue shirts and goggles and must pass test No. 221 (wrench- ical) or No. 225 (screwdriverical) before signing up for courses such as Water Puraps 4230. Appliance Electrical Diagnosis 9213 is particularly challenging, while Troubleshoots 0601, they say, is cake.

"Every day you show America they can trust us you," reads a poster behind Duff's head. He says, "Let's go!" and leads me down a long corridor, then clicks on a light. Suddenly we're surrounded by washers and dryers and ovens, stacked four shelves high. Stoves about as refrigerators sized in half, dishwashers with see-through doors and cross sections of motors. Some date back 20 years. I sense that Duff would like to pull down a space heater and start scorching it apart.

ILLUSTRATION BY PETER BOEY

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shed.



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OFF THE WALL

He looks so happy. I feel pretty great myself.

But then we come to Room 11. Duff introduces me to Dale, the refrigeration instructor. "Ever clean out the space underneath your refrigerator?" Dale asks, handing me a long, slender brush. I feel an urgent need to be honest. I say, "Um."

He smirks. "Nobody does. It's the whole problem: You waste so much food of people you collected in that compartment."

"Um," I say.

He tells me to clean under my refrigerator at least once a month. I feel as if I'm at the dentist and this is the flossing lesson.

"Okay, now, I promise," I say. I don't have the heart to tell him that three dogs and two cats live in my house, so the space beneath my refrigerator is probably ashy enough to get me court-martialed. Besides, it's my belief that the junk under there may be the only thing keeping that baby standing.

Eying me, he tries another move. "Do you have a vacuum cleaner attachment that would reach under your refrigerator?"

"My vacuum cleaner?" I wince the memory of confessing that my vacuum cleaner has no swirling attachments, not since the death of my puppy. I was able to revive my vacuum-cleaner hose, on the other hand, with some fancy duct tape work. The tape wasn't as effective as my ice maker, however, which is quite a disaster. My dishwasher also leaks, but only during the rinse cycle—when it makes that squealing sound. Which you can't even hear in the summer, because my air conditioner's ranking deserves not everything. Which would be worth putting up with if it actually cooled the room enough so the dryer would work, which it doesn't, which is a mystery to me. My dryer works only in the winter months. That's why I have a clothesline out back.

My head began pounding from all these images of all my needy appliances. I feel alone. We march to the laundry room. Duff introduces me to Sally, the washer and dryer teacher, who has a very expressive no-nonsense face. She tells me dryers are the number one appliance for which technicians get called today. "It's mostly belts," she says, handing me one. "What do I have to do to put one on?"

Before I can answer, I have my check to the computer floor and am watching Sally operate on the guts of a dryer. We're like two bushes in a bushole. A certain trust builds

between us. I tell her about my dryer.

Sally says my peoplehood. I tell her you, it opens the clothes moans, but no, it doesn't dry them. Not in the summer. Not it works perfectly fine in the cooler months. She takes me of the can and a personal question. "Do you clean out your hair sweat? Because, you know, a dryer has to breathe."

"I answer to God I do," I say.

She looks down and shrugs. "Class!" she says, calling over a dozen giggling women. "I have a problem for you." They fire me deeper questions about needles at me. They scratch their heads, run their palms over their lips, look down. She says what about bushes? Are those bushes that bloom in the summer, the things blocking the dryer vent? "Believe it," says just the hearing and air conditioning teacher, who has chosen all his own.

But there are no bushes blocking my vent. My dryer has swapped the ac. Sally asks if I will please go home, remove the lower panel from my dryer and fax her a copy of the wiring diagram posted there.

Me? A wire diagram? Can I be called into active duty just like that? I know my chest back and straighten my shoulders. "It's up to me," I think. I tell Sally that I will accept the mission on behalf of fluffy mammals, which you can't get with a dishcloth.

When I get home, I pry off the panel and blow on it, but the wire doesn't budge. I get a rag and rub. I'm about to call in the card wool when the wiring diagram, like an answering map, reveals itself from beneath dozens of pink. I trace it that way and that with my finger, right up to a leg, far past where the diagram ends all to nothing.

I bang my head. I think about Sally, Duff, Dale and all those common-sense evenings with their jiggles of hope. Then I think: What a second. How, exactly, did I describe the symptoms of my sick dryer? I could describe the dryer spent but didn't heat up in the summer. But in three corners!

I stand up, push the "On" button. The drum does not, in fact, move.

I can hear Sally saying: "Well, I could understand it if the drum didn't move. That would just be your thermostat."

I can hear me saying, "Oh, but the drum moves fine." Whoopee.

I think about all those people in their blue shirts attaching their heads, running their palms over their hips. I think about going AWOL. ■



If the deck cushions weren't in it, they'd call them house cushions.

Our easy-to-assemble deck box is specifically sized for lounge chair cushions. But use it for charcoal, citronella candles or anything else you don't feel like lugging inside.

Rubbermaid

J/A/98

(extras)

Slim down, you move too fast

Almost everyone appreciates the environmental neighborhood late-revolution and modernity, with cars moving by at a cool pace. Here's another point in favor of narrow streets: They're safer. A study conducted for the city of Longmont, Colorado, found a correlation between approximately 23,000 accidents and the width of the streets where they occurred. A 50-foot wide boulevard, for example, proved 10 times more accident-prone than a 24-foot side street perhaps, says researcher Peter Smith.

because straight, broad avenues might seem obvious to favor in making wide streets narrower is easy. "We can push curb lines deeper into the roadway, change parallel parking to on-street parking and even put in rotary islands at intersections." New roads, of course, can start out slimmer, and that's just what's happening in some development around the country looking to attract back residents to more traffic as a time 20 miles per hour, developers are making streets 24 to 38 feet wide.



The narrower the street, the safer it is, because car drivers are less likely to put the pedal to the metal.



Garage De-Gooper

Cleaning an old concrete garage floor—imregnated with oil, grease, gasoline gum and other products of a petroleum-based economy—is no job for a perfectionist. Short of excavating and repaving, the only way to restore such a floor to pristine condition is to use a high-pressure water sprayer, which unfortunately tends to erode surfaces. But a non-derusting specialty company offers a cleaner that does the job better than any degreaser, industrial product or bleach we've tried. The two-part system simplifies a non-rubbing solution (applied with modest power) and a wire brush to lift grease, followed by a shale remover. Although the distributor recommends leaving oil the second solution immediately, leaving it on for up to 15 minutes produces a lighter floor. In any case, apply the second solution very evenly and dilute with water all at once—or stir up the sludge. One other precaution: Keep both solutions from splashing on any ironed possessions.

“Owning your own home. To me, that is the physical manifestation of everything this country is about.”

—Andrew Cuomo, N.Y. Governor of New York and Urban Development

Funnel Vision



"You never have a funnel when you need one," says *This Old House* host Steve Thomas. "Mine always come from the kitchen—along with my wife's wrath when they come back gooey."

The solution is a collection of specialty funnels with snake-like arms that reach elusive gas tanks, spouts that swell to redirect flow, extended rims to prevent caustic chemical splashes, and screen traps to filter debris. *This Old House* contractor Tom Silva prefers plastic funnels because they don't rust or dent. He's also partial to flexible tube attachments that extend up to 20 inches and, he says, can get into "funny positions, so you can maneuver through the configuration of handles and controls of a compressor when you're changing the oil."

1. Made of recycled polyethylene, a 7½-inch wide funnel provides up to 3 quarts of liquid and has a built-in pour spout.
2. Built-in handle helps position the unit, removable and most reaching screen traps (shown).
3. Adjustable screen maneuvers through engine parts, recycler base holds quart bottles of oil.
4. Flexible detachable 12-inch screen plunger with pour spout.
5. Clear plastic pour spout and 12 inches for reaching into cold tanks.
6. Concrete screen traps (shown) can hold up to 2.512 degrees Fahrenheit, making it ideal for concrete alternatives.
7. A 14-inch connector reaches four-foot reaches into spouts that are four to reach.
8. One foot, five inches and pouring flow through under heavy-duty polyethylene spout with oil leakage.

TOP PHOTO: JIM LAMBERT/PHOTO; BOTTOM PHOTO: JAMES M. HILL FOR J/A/98

Brush up on giving, painting and papering

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www.elsevier.com/locate/jmb

The point-futures women of the flight. Quincey illustrates one night out with a well-known photographer helplessly trying to perform phenomena—aligning, listening, wondering, methodizing. Quincey explains the cause and solution follows. A professor's career chart has structure and exterior points such as discipline, color extension, midline cross-section and adhesion. Sponsored by chemical manufacturers, Butler and Hays, the one teacher on environmental issues and somewhat why high ground games tend to go on better and last longer.

張國榮 張國榮

Down to Earth

Gardens often beckon readers to settle under a leafy tree with a heavy book. But *Keeping the Garden in Place*: Withering, Dwindling and Other Seasonal Tasks demands to be propped open against a rug while you get busy. According to Steven Reddy's wise-bored manner, summer is also for pruning flowering shrubs and dandelion snacks but also for antithetical projects such as creating topiaries or digging ponds. Don't be intimidated by the photos of ancient English gardens—they thrive because they get more rain than most. And note that the instructions to draw grass clippings are common to American lawn culture. • *From 1973 until his death from cancer in 1993, Henry Mitchell shared gardening wisdom through an accessible Embroider column for the Washington Post. The third and final collection of these essays, Henry Mitchell on Gardening, demonstrates why his readers often clipped the articles and sent them to kindred spirits in other cities. Mitchell combined Southern hospitality with passion for gardening and English literature to create intimate writing that welcomed to one's own back yard. This is the book to settle down with while that leafy tree*



Cutting Castle Corners

Thirty-year-old electrical engineer Craig Wiegert hasn't lost his sense of wonder about sand anymore. In February he patented a sand additive that he tested on New Jersey beaches last summer. "You can have black, golden and straw-colored sand-colored shapers," says Wiegert, who likes near white sands and has worked hard on the Jersey shore every summer since he was 13. Consisting of galate and salt as well as colored and white sand, the biodegradable, nontoxic additive improves adhesion among sand particles—a quality that supports sandcastle builders by providing more for beams with lemons. "It still takes skill to measure the sand into each other



Just right," says Weggel, who's working on an improved formula. As for the experts, they'll have to do no pondering. In competitive sand sculpting, additives are taboo.

Outlaw Weed

After yanking spoiled knapweed bare-handed from his bluish grocery, U.S. Forest Service and scientist Jay Merhoff developed aggressive hedge trims on his policy and ring fingers. Fearing the aggressive trimmers' spreading, doctors impaled the fingers and speculated that the trims were caused by asymptomatic factors, a reported in knapweed sap that causes rashes. Although the link between knapweed and rashes is inconclusive, the weed does have a documented particular for taking over soil as it competes with grass for water and nutrients. Spotted knapweed, which blooms in July and August in the Western rangelands and scattered areas of the East Coast, is showing up on "washed" bits of local weed boards. Agriculture officials caution anyone in contact with spotted knapweed—including people using strong trimmers—to wear gloves, long-sleeved shirts and face shields. Selective broadleaf herbicides can control the plant, but chemically eradicating weeds before infestation is the preferred way.



Purple, speckled flowers with 10-
each cluster growing from the top
give away spotted knapweed, now
on the most wanted list of pest
plants. Stems are 1 to 2 feet tall.

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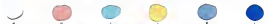
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What's in a Name?

Judging a paint by its color used to be a matter of black and white. Now it's more fun: One person's green is someone else's Sylvan Whimsey or San Juan Spritz. Test your palette prowess by matching names with colors.



1. White Space 2. Kismet 3. Chesapeake 4. Dead Salmon 5. Flannel Peaches 6. Puffy Navel 7. Daffin's Tea 8. Hungry, Dumbly 9. Lingo-Lingo
10. River Runner 11. Spouting Flower 12. Teary Blind



13. Not a Word for a while 14. White Cornflower 15. Not a Day

Hot Wax

Back in the 1950s, Dr. Alfred Werner, research director of the British Museum, tested one wax after another in his galleries of antique furniture. He discovered that natural waxes like carnauba and beeswax were porous, turned yellow and contained acids that eventually attacked the object, supposedly being protected. Oil finishes darkened furniture and, being sticky, held dust. But one waxy muck produced—"cracked"—is the industrial term—during the refining of crude oil seemed different. Werner found that when refined into a glacier-white microcrystalline wax and rubbed into wood, metal or leather, the by-product dried to a hard, clear finish.

Today the product coats suits of armor in the Tower of London, oak wine-seeping in Windsor Castle and marble sculpture at the Smithsonian Institution. A little goes a long way: a 7-ounce can should be enough to polish a houseful of furniture—not to mention armor—to a regal glow.



Wildfire Fighter

California's summer wildfire season has always proved a threat to the homes of naturalist John Muir. About 90 miles north of San Francisco, the 1882 Victorian redwood Victorian is surrounded by dry chaparral. "Three summers ago, a fire came within 500 yards of the place," says ballgame and wildlife



reformer Brian Garrett: "We were out there with garden hoses, trying to keep the wind-charged roof wet." Now he can just wait for the bees. The National Park Service, which oversees the land, topped its efforts with 20 sprinkler heads. When faced on memory, the system—part of a \$250,000 fire-prevention project that includes interior sprinklers—pumps out 440 gallons of water per minute, enough to soothe the gutters and douse any wind-borne embers.



When wildfire rages at the property line, the historic John Muir House in northern California "turns into a red gutter," says ballgame reformer Brian Garrett.



NEWMARK

• August 11-15—
National Hardware
Show, McCormick
Place, Chicago, Illinois,
815-431-5177,
201-840-3033,
www.nhwshow.org

• August 11-23—
International Wood-
working Fair, Georgia
World Congress
Center/Tamara Davis,
Atlanta, 770-261-0910

STEVE THOMAS

• July 11-16—
Micro Home Show,
Crescent Center,
Sacramento, Cali-
fornia, 538-581-7676

EVENTS

• July 21-26—
European Festival,
Wentworth State
College, Weymouth,
Massachusetts,
617-774-4311,
www.euro.org

• August 11-23—
Southern California
Home to Garden
Show, Anaheim
Convention Center,
Anaheim, California,
562-442-7667

Asbestos Eater



Asbestos has a fibrous structure—magnified here 12,000 times—which makes the material dangerously resistant.



A new foam "digests" asbestos, rendering the material innocuous by absorbing its crystalline fibers and converting the chemical components into non-toxic minerals, as seen here magnified 60,800 times.

A terror called asbestos, identified as a carcinogen in the 1960s, still lurks in the basements, crawl spaces and furnace rooms of tens of millions of American houses. Removal is expensive and risky because disturbing asbestos can liberate a flurry of microscopic fibers into living spaces. Less expensive and somewhat safer approaches have included encapsulating fibers with a vinyl-acrylic coating or enclosing pipes and furnaces with a gypsum-based wrap. But now there may be a better solution. In conjunction with Brookhaven National Laboratory, former asbestos manufacturer W.R. Grace & Co. has developed a foam that contains phosphoric acid and a fluoride catalyst end that "digests" asbestos. The foam breaks down the material's fibrous structure and converts its chemical composition into benign minerals. Yet the asbestos retains its fire-retardant properties. The bad news is that, although Brookhaven scientists believe the foam has residential potential, Grace is now marketing it for use only in commercial and institutional buildings, where asbestos was sprayed on extensively as the fireproofing of choice.

ASBESTOS: MICROSCOPIC NATIONAL LABORATORY; ASBESTOS FOAM: WENTWORTH STATE COLLEGE; MICRO HOME SHOW: MICROMARK; EUROPEAN FESTIVAL: EUROPEAN FESTIVAL



Even if people disagree on how to save the rain forests, this product sure picks up the workshop slack.

and Sir Lancelot unswayed. The reasoning behind the slogan presents a thorny dilemma to woodworkers: Saving exotic woods, the company says, would do nothing to stop developing countries from slash-and-burn agriculture to create pastureland. So first, upon the requirement, creating a market for each waste gives nations an economic incentive to protect better forest management, cutting selectively, logging naturally infertile areas and replanting every tree killed. The company says it buys only from suppliers that follow such procedures and it monitors wood sources in conjunction with government organizations. However, only a handful of these suppliers are certified by the Forest Stewardship Council, the international watchdog that many environmentalists consider the ultimate stamp of good approval. Politically correct wood is enough to make one admire masamune.

Wood-Be Solution

Considering that rain forests are disappearing at an alarming clip, using endangered tropical hardwoods for exotic projects might seem irresponsible. But a Finnish company is encouraging hobbyists to "vote a bowl to save a tree" and has put out a pro-musical power tool using expertly carved bowls made from 384 rare species including Brazilian purpleheart, Jamaican curatella



Eye Aid

Goggles offer the best protection against flying debris and splinters in the workshop. When steel or iron don't show, find its way into the eye, however, try this rounded stainless-steel pin-shaped probe. The point magnetically draws out the particle—without touching the cornea. The other end of the 4-inch-long tool has a nylon loop to lift away bits of wood or other nonmagnetic materials by breaking the surface tension between the particle and the stream. Neither end of the probe is recommended for removing a foreign object of any type embedded in tissue. And, of course, any eye injury may require prompt medical attention.



In the middle Ages, even when the structure was wood, they had to await the Second Coming.

—Jim Ramo,
a Carver in the Month

UNUSING TOOL Screen Star

When fixing or replacing a screen on a door or storm window, look for one of these two-wheeled gizmos in the same hardware store that sells the mesh. With both, the clerk will know it by its proper name: screen installation tool. Otherwise, call it the two-wheeled gizmo for putting in screens. They'll know. Although this one, since 1955, has a grip made of cast aluminum—thanks to a post-war glut of the metal—most models today have wooden handles. The tool folds easily in the frame; the body curves to precisely where the fingers curl around it. The edge of one wheel is tapered to push the mesh into the slot around the perimeter of the frame. To finish the job, the other wheel is ingeniously grooved—perfect for pushing in rippled rubber or vinyl splines to lock in the mesh.



FINAL FRONTIER GEAR When they build the International Space Station, astronauts will use tools that

are decidedly high-tech—and, surprisingly, some that are not



Workstation
The mobile version is used for shipping boxes in cargo. A modified space model engine hand panel allows work in such dusty Starliner shed orbit as the head workstation moves.



Self-heating plate
Adapted from a stainless steel medical version, a plate keeps your elbows up to 150 miles in diameter. The plate can withstand temperatures from minus 200 to plus 200 degrees Fahrenheit.



Brush
Teflon bristles rub space suits of hydraulic fibers, which could swell from balls of molten fuel and leave suits torn—and possibly fatal—leaked or vapor back to the pressurized cabin.



Tool box
Opens like a canister and holds up to 21 tools. Measuring 2 by 1 by 1/2 feet, the 200-pound aluminum and steel chest



has a handle and fast holds on crew members can brace themselves when pushing or moving equipment.



Cable
Resembling "paws of life" used on earth, cables, it's handy for snagging cables and electrical wires. Astronauts used a similar tool to cut free the Shuttle Solar Array on the Mir space station.



Extradosator activity display
For use outside the spacecraft, a 24-in. 300-psi computer will handle up to 500 pages of data, including instructions, photographs and diagrams to assist in making spacecraft or space-craft repairs.



Patch
The patch will withstand 120 feet pounds of torque and feel a pinch about half a 100 pounds, making it suitable for use in the head and chest. Astronauts accommodate hardware design from NASA's standard 1/2-inch size.

W. B. B. B.



New N' Betzy



F-SERIES CELEBRATES FIFTY YEARS OF RUBB FORD TOUCH

Over the last fifty years Ford F-Series trucks have obviously become more powerful, more comfortable, and more advanced. But there's one thing that hasn't changed. It's still the tough truck you can always count on. And that's the best way we know to turn a new truck into an old friend.



THE MOST BUILT, BEST-SELLING AMERICAN TRUCKS

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Based on an analysis of the 1990s, the authors predict that the future of the U.S. economy will be characterized by a continued decline in the share of the economy that is manufacturing, and a corresponding increase in the share of the economy that is services. This prediction is based on the fact that the U.S. economy has been experiencing a long-term decline in the share of the economy that is manufacturing, and a corresponding increase in the share of the economy that is services. This trend is expected to continue in the future.

POWER TOOLS

● 本书可作为高等院校、职业院校、培训机构、企业员工的培训教材。



POINT AND SHOOT

Nailing made easy

Slapping two pieces of wood together has for almost all of history been a remarkably slow and laborious, a painfully primitive process of pounding on a steel spike with what amounts to a club. Modern hammers with brightly colored high-tech handles, contoured grips and polished heads haven't helped much. But deliverance arrived in 1968 with the invention of the pneumatic nail gun. Although the first models were clunky, expensive monsters, it has evolved into a light, portable hand tool that pops nails into wood faster than most people can think. Best of all, nailing does so without derailing wood, splitting timbers or marring their finish in the pockets of physical therapists.

That Old Mower contractor Tom Silva was one of the first residential carpenters to get the mid-gun bag in the '90s. "I was watching an ad on TV, and I noticed a gun that shot nails being used in a factory," he recalls. He tracked down the manufacturer, who lent him a compressor and a couple of guns. "We were able to frame the last half of a three-story apartment complex in a third less time than we'd spent hand-

This Old House continues. Tom Sills' year-round crew, working in the soil as fast as he can pull the trigger. When he's done, there are no holes, no marks on the earth and no disturbance to Big Game.

PHOTOGRAPHED BY JOE YETKINS

setting the fan belt?" Tom says.

Power tools aren't necessarily better; in many cases, they're better. A nail gun can punch a fastener into place in a single 600-millisecond per hour shot. The wood, caught in a high-turbulence air stream, has no chance to wiggle or move. Gun-fired nails penetrate solid, over-laid framing, which would hammered nails. There's no quaking and shaking, plaster stays put, wallboard doesn't pop. A dier's work doesn't crumple.

Until room by, every nail gun required an air compressor and a length of hose. A failure of gas, compressor or hose, and it was back to wrenching clips. The biggest aggravation, it turned out, was the hose. If it wasn't getting tangled in a doorway, on a ladder job, around a southeast leg—then it ended up an inch short of the target, like a dog reaching for a leash.

From laptop-computer-to-cell phones to the battery-powered tools that have swept the building trades, people crave portability and the freedom that comes with it. Freedom came to nail guns in 1996, when the Fastlane Corporation introduced a nail gun that functioned without hose or compressor. The gas is provided by internal combustion, just like the granddaddy of all portable machines, the gasoline engine.

Pulling the Fastlane's trigger releases MAPG gas (methylacetylene propadiene) from a disposable fuel-cell cylinder and injects the gas into the combustion chamber. Simultaneously, a spark de-



Pressing the nose (1) against the work releases liquid MAPG from the fuel cell (2) to the fuel regulator (3), where the fuel mixes with air, changing from a liquid to a gas and is propelled into the fuel line. Pulling the trigger (4) sends the gas into the combustion chamber (5) and generates a spark at the plug (6). The gas ignites, driving the piston (7) into the nail in the work magazine (8).

positioner (9). And the tool ends its journey's work rather than a pneumatic's pop, so the process is cooled. The bright orange plastic Impulse is 1 to 2 pounds lighter than its metal pneumatic brethren, and it hooks easily on a tool belt.

Last year, Power-Cable began manufacturing gas engines called *Recessors*—a frame, two fuel cells, and a crown cap for access-

ories the mix and plunges a piston against the fuel head, driving it home in a lightning-quick stroke.

Fastlane nailed its Impulse gas-powered nailer in two seasons—a framing nailer and a smaller model for finish work. The smaller gun gets about 2,500 shots per 97 cycles; the larger gun 1,200. Both versions operate similarly: Insert the nail, snap on a rechargeable battery, load a strip of colored coils and you're in business. The 6-volt battery, which operates the spark plug and a tiny fan, is good for about 4,000 shots between charges.

With any nail gun, loudness or otherwise, simply squeezing the trigger won't send steel

spikes flying through the air. Before a gun will fire, you must press its nose firmly against a hard surface to release the safety. Pressing down the nose of the Impulse also kicks on the fan, which cools air and fuel in the combustion chamber; then cools and clears the chamber after firing. Pushing down the nose of the Impulse takes more force than a compressed-air gun needs—12

Nail Bandoliers for Every Job

Crown staples from 2 1/2 to 2 inches long. Ideal for fastening ends of the crown length. Used in faster sheathing and nail plates.

Framing nails have D-shaped heads so they can seat closely. Ideal for sheathing and nail plates.

Small nails from 2 1/2 inches long down to 1 1/2 inches. Ideal for sheathing and nail plates.

Plastic collating material goes D-head, D-head, D-head, D-head. A shell collating makes them easier to drive and harder to remove.



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SERIOUS TECHNOLOGY
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BATTERY POWERED

FRAMING
7 1/2 poundsPRIMER
8 1/2 poundsKeep Them Dry,
Clean and Cool

Gas-powered tools breathe life, so it's important that they get plenty of it—clean and dry. A soft foam filter behind a grill keeps dirt from blocking a rifle or the breathing air that's the combustion chamber for the tool, in the case of the Pruside's. If the filter clogs, the gun won't fire. To clean the filter, open the grill. On Portion-Cable tools, it is held by 4 screws; the Pruside's slips up. Shake off the big chunks of grit, then the filter with dish soap and water; then squeeze the filter dry between paper towels. Slink it back in, and go to work. Do this every time you replace the fuel cell, and the tool will be less likely to choke. Filters won't stop water, so moisture-wipers worn against using solvents outdoors in wet weather. If a gun gets too cold (below 22 degrees Fahrenheit), its fuel cell won't maintain proper pressure. If a gun gets too hot (staying in the sun), it may fire intermittently or not at all. The guns are also altitude-sensitive. Pruside's models stop working above 8,000 feet, or above 8,000 feet for framing nailers with a special valve. Portion-Cable reports that its guns are being used at altitudes of 10,000 feet but notes that performance may be erratic.

Jarrett testifies: "It's a frustrating reality of power-nailing, but they're really cleaned in both tools by flipping up the magazine. [For safety, always remove the fuel cell or battery first.] A light blast of air drys off fine spray that will clog the grill and the bits of paper or plastic collecting material that causes clogs. Keeping the magazine, too, helps testpieces much smoothly toward their destiny.

BATTERY FREE

STAPLER
8 1/2 poundsPRIMER
8 1/2 pounds

blow chambers and holding mechanism. All use MAP gas in a cylinder similar to the Pruside's, but they operate without fans, motors or batteries. A pressure-sensitive piezoelectric crystal, similar to that in a gas barbecue grill, generates the spark. The air and fuel are mixed and exhausted as the tool is plunged—no cocking the gun requires 23 pounds of push. The Hammer shoots two nails per second, the Pruside shoots three and powermatic models can deliver five.

For a pro like Tom Silva, extra effort and weight can make a day longer. For a home owner who uses a nailer occasionally, the Hammer is a pickup tool; gas tool that cuts down on recharging

time. The Hammer requires very little maintenance: Its ignition system is designed to last for about 70,000 shots and to be replaced by the owner. "It's safe for a case can when you have to pull the trigger three or four times before it fires," Dennis Hesterman of Portion-Cable says. Gas guns aren't about to make Tom's trimmer power miter obsolete, but they fill a corner niche. "If we have a small bunched job or maybe some high nailing up on a roof, we'll close the gas valves on the truck," he says. "Also, if we're actually through a house, nailing up trim here and there, those guns are nice to have. They're handy. No question about it." ■

MUD KNIVES

The trowels that smooth drywall



After a solid month of hard labor, tonight I'm standing inside what will soon be my wife's new place, a small, gabled-roofed building in our backyard. All that remains is to finish the drywall, in one last burst of work snatching over a couple of days and nights. Fortified with a pot of black coffee, some high-energy rock and roll, my collection of drywall taping knives and five buckets of mud, I'm ready to work until dawn.

The drywall before me isn't pretty. There are staggered rows of dented screw holes, lots of shallow gouges where tapered edges meet, glimmering metal corner beads and a daunting grid-work of open seams covered by mesh tape. My job is to take the mud—a creamy, whitish goo otherwise known as joint compound—and repeatedly butter thin coats of it onto the walls and ceilings. By the time I'm finished, all that drywall will be impressively smooth, flat and ready-to-paint with no holes, lumps, bumps, holidays, dips or dipples.

Faced with the dirty, repetitive task of making every imperfection vanish, it's tempting to do the same, to walk

PHOTOGRAPHS BY ERIK BARN

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M A T E R I A L S

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A 44-foot-long, 30-foot-diameter redwood filled in the early 1960s during logging. Foreman (left) and Herb Bunde in the trunk yielded more than 75,000 board feet of lumber, enough to frame five average-sized houses.

RARE WOOD

Great redwood is getting scarcer all the time

On this gray rainy day in Ukiah, California, lumberman Joe Gancero seems unaffected by the damp as the old redwood piled around his small salvage yard. Clad in his yellow slicker and headlamp cap, he bobs and weaves around refusen submerged from a woodchuck, strides past neat stacks of stumps from beech, yew, pickle and olive oars, then steps at a pile of 12x12s. Leaning over one of the 20-foot-long "sticks," as he calls them, Gancero peels at a gray ring of dark wood with a pocketknife, using both barrels to steady the blade. Just 1/8 inch below the beam's weathered surface, the knife rones a curling blower of pure red—the timber's heartwood—dry, fragrant and completely free of decay.

Gamero salvaged the beams from an obsolete 100-foot-tall water tower near Eureka, California. Made from 1,000-year-old redwoods felled about the same time Teddy Roosevelt rounded up the Rough Riders, the tower endured a century without even a protective coat of paint. When it was dismantled, Gamero retrieved its 80,000 board feet of lumber, most of which he sold before the first piece hit the ground. "I sell to builders and home owners who appreciate old-growth redwood for its durability and beauty," Gamero says. "They're also very concerned where the wood comes from. Their want honesty, not just cut log."

This rare wood has a splayed history. Before the middle of the 19th century, forests of redwood—*Sequoia sempervirens*—stretched like a grumpy beard along a narrow band of coast from western Oregon to the Sea. The

Green Redwood

When people tell Jason Grant they feel guilty using redwood, he reminds them, "There are no good or bad woods, only good and bad forestry practices." Grant, a vice president of EcoLinker International in Berkeley, California, stocks redwood lumber from only small timber companies with excellent records of forest management. These companies harvest at a sustainable rate—approximately 3 percent of their holdings might be cut in a year—picking trees from the forest with minimal disruption to the ecosystem. They loggers, Grant says, "can yield a chain saw as well as a jazz musician plays the saxophone."

But it's not necessary to take Grant's word for it. Independent outdoor outfitters in detail how these companies manage their forests. If they meet the standards set forth by environmental watchdogs such as the Rainforest Alliance (certifying under guidelines developed by the Forest Stewardship Council), they become certified. EcoLinker stocks the certified lumber with an "S60" or an "S66," but not the individual pieces of rough lumber.

Like fast-fish certified organic, lumber labeled as certified assures consumers that the trees have been harvested without long-term damage to the forest and best supports life in the noncertified sources. In fact, only a few small companies harvesting mostly second-growth stands have received certification. The big lumbering operations haven't applied.

The price of certified redwood is the same or slightly higher than non-certified, so the biggest obstacle to using it may be finding it. Particularly for home owners who want to build with a clear conscience, the Rainforest Alliance maintains a list of certified-lumber retailers.



just trees—the value of all living things—spread out over 150 feet and could grow to 22 feet in diameter. Bunched in dense groves of perpetual night, they had few enemies, other than high winds and old age. Even fire could not penetrate their thick, fibrous bark. When they finally fell, some had lived more than 2,000 years. Yet they could be on the loose floor for centuries more, their heartwood safely attacked by rot or insects, carrying scores of new trees on their decaying upwood as deadfall offspring sprouted from their shallow roots.

Then came the California gold rush in 1849. Pressed by an exploding population hungry for building material, lumbermen discovered big trees were a source of big bucks. In two centuries, a single acre of giants apparently produced more than 3.4 million tons of feet of lumber, which today could frame 106 single-family dwellings, each about 2,000 square feet.

And what magnificent lumber it was—lightweight, straight-grained, easily worked, nearly impervious to rot. In the rapidly packed groves, growing at a glacial pace, redwoods could only sustain branches in the top third of their trunks. As a result, their massive lower two-thirds were clear, pristine wood, some with as many as 40 growth rings in the inch. In 1999, Henry Gannett of the U.S. Geological Service wrote "One may go through miles of landscapes at Santa and measure millions of feet of lumber without finding a knot or, indeed, an imperfection of any kind."

Whisper, double-belt trees, doubley eagles and doubley schoolers—then later chain saws, Caterpillar-sized chains and skidder helicopters—had their way, ruthlessly gnawing down and hauling away size after size of the tall order. Sawmills cut their gigantic trunks into giant planks, joists, poles, and shingles, mauls, and sawdust, all manner of debris that had to be sent to the wet and windy. The light-colored wood also became the framing—as well as the siding, flooring and exterior trim—of homes—for California's many Victorian and Craftsman-style houses and countless other buildings. In a little more than 100 years, an estimated 90 percent of the pre-Gold-Rush trees were gone.

Still, many forests grew back. The seedlings and juveniles left behind during the logging onslaught shot up at an astounding pace. Unlike their lighter and space-saving ancestors, these new trees grew bushy with branches and reached formidable, harvestable sizes—up to 130 feet tall.

For the 15,000 square-foot house in Sonoma, California, all the doors, rafters and some exposed beams were salvaged from a redwood bridge.



The 100-foot tower of redwood near Eureka once held up 121 tons of water for a lumber mill. When cut, it was dismantled the structure in 1977, most of its 100 (16x12 beams were recycled into a 7,000 square-foot house in La Jolla, California.

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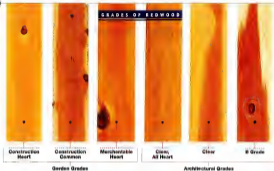
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To help sort through the knots and burls in redwood lumber, the Redwood Inspection Service sets up a rigorous lumber grading system, which each mill uses to sort the boards as they are sawn. Garden grades are allowed knots and varied wood grades, while the architectural grades are more consistent and relatively knot-free. Clear, all heart redwood, the most desirable and expensive grade, has uniform reddish-brown to red knots. Clear is also knot-free but has splashes of whitish sapwood, a part of the tree with little decay resistance. Avoid wood with pitch, unless you plan to cut it out. Grading doesn't indicate whether the wood is old growth or new, or how red-stained it is.

and 37½ feet in diameter—is just 68 years.

These young trees, however, yield a lower quality wood. Outcompeted by competition, much second- and third-growth wood has widely spaced growth rings—as low as 3 an inch—and an abundance of knots. Gone is the strength, beauty and rot resistance of wood from their ancestors. The heartwood of second-growth redwood is still

wood from young trees still has many of the reacted qualities of old-growth wood. Although it is too weak to use as framing, our pawns live in rich color, light weight, material shrinkage and soft into feel. Redwood has little or no pitch, so tools and hands stay clean and the wood seems far better than other timbers. The better grades of heartwood are remarkably stable, hardly changing in

dimension through great

Toxic Waste We Love

Redwood owes its legendary resistance to fungicidal insect-repellent toxins called extractives, which give redwood's heart its characteristic tint. These polyphenolic compounds are produced in the actively growing whitish-colored sapwood that sheathes the tree and gradually migrates inward. "Extractives are waste products, byproducts of tree metabolism," says Charles Jourdain, vice president of technical and inspection services at the California Redwood Association. "The older the tree is, the more extractives it has."

The lumber from younger, smaller trees also tends to have a higher percentage of sapwood, which is extractive-free. Richard Waring, professor of Forest Science at Oregon State University, warns, "If you have streaks of sapwood going through boards in your deck, they'll be more susceptible to rot." To forestall the trouble, most decks with water-repellent preservatives or pigment penetrating oils as soon as the wood starts to lose its color.

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A 34-foot-long, redwood fence in Florida today. California, it held together with other common and garbaged plastics. Now, forever your really nice, redwood deck.

edge when you're hand-planing." Working with well-sharpened tools is crucial, Hodges says. Otherwise, the wood's soft fibers are crushed rather than cut.

All redwood takes and holds paint beautifully, but outdoors it fast needs to all-round primer coat to stop "bleeding," the way some thin varnishes when water soaks the wood's decay-causing extractions. A primer will also help the marked difference between the light-brown, curly wood and darker, less wood in each ring.

Fracturing redwood's joint-cut pink line inside is nearly impossible, left or weather, it naturally turns a soft, dark gray. Hodges says the gapping, with processing, oil stains. "It starts off looking solid, but then, ages to a faded, intense brownish hue and stays there." But Alben Skendzel, owner of the Lambert Farm lumberyard near Berkeley, says anyone who polishes a piece of redwood is doomed to put it on again and again. Salomon says he's every year to demonstrate new products that clean and finish decks. Skendzel points to the grip redwood deck a while he offers and tells them to pick a section and go at it. "As you can see," he says, "my finishes and stains have all worn off and failed." Skendzel advocates buying the best wood you can find and just "letting it be."

In the early 1990s, Reddy-based architect Bernard Maybeck first popularized the aesthetic appeal of using redwood by using the com-

monly wide, knee-free and inexpensive boards then available for summer gridding. Left untreated to darken with age, the wood changed color simply from exposure to the sun, shading from a joint-cut blend pink to a deep red cherry or mahogany. Those who have resided in a Maybeck house like it to brag inside the tree still.

The cheap, high-quality redwood at Maybeck's disposal is now all but unavailable. Only about 4 percent of the nation's forest remains, either in 315,000 acres of parks protected from logging or on private lands where environmentalists battle to keep loggers out. Old logs scattered from wildfires, river loggers and sawmills are increasingly hard to find, so far the goings-on from salvaged structures. "I recently had to go to upstate New York to buy stock, and I got some beer tank bottoms from New Orleans," Gurner says. "But what's left is pretty limited. Frankly, I don't have a clue where my next batch is coming from."

Scarcity is driving up prices. Clear old-growth has risen, averaged at off the stump, goes for as much as \$4 a board foot, compared to \$2 a few years ago, and construction, lower, the second-growth lumber commonly used for decking, costs \$3.25, up 62 percent in the last decade. The wood that was once America's most plentiful is now in such short supply that building with it has become a mark of status among the wealthy. ■

PHOTOGRAPH BY MICHAEL GOODMAN FOR ENR

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TO DO THE JOB RIGHT



Using a 1½-inch-wide mortar's shovel and a 2-pound masonry trowel, Mario Macchicelli chips out the old mortar to reveal the joint to prepare for the mix.



After setting a joint to the depth of 1 inch, he moves on with a pneumatic chisel to square the sides of the joint and blow out loose particles. "The mortar won't stick to dust," he says.



Mortar is ready for spreading when it sticks to an upside-down trowel. To keep the mortar from drying out too quickly at the joint, he first sets the wall with a water sprayer.



To ensure the mortar is uniformly compact, he presses down on four thin layers onto the joint with a back trowel trowel. He lets each layer set for 15 minutes before adding the next.



Mortar that protrudes from a joint cures faster, rather than drying or empty. Once the mortar finishes, Mario Macchicelli cuts off the excess with the edge of his pointing trowel.

fitting to accommodate the brick's slight expansion and contraction. Like all masons, however, it slowly eroded, and after 60 or 70 years the weathered mortar was chipped out and replaced, a process called repointing (or pointing).

Unfortunately for this wall, masonry practices underwent a routine shift in the 1930s. Bricks became harder and more rigid, as did mortar. With the ready availability of portland cement, a material so hard and so impervious to water that it is used to plug leaks in submarines, masons abandoned lime-containing (fat-based) mortars, which set so slowly that no more than seven courses could be done in a day. Instead, bricklayers adopted fast-setting masonry cement and ground limestone blended together with as much as 65 percent portland cement.

That modern mix was the surprising culprit the previous masons had stopped on the Rogers house game. Once a crack, the defects grew-and-took at bricks, and mortar was replaced by a petrified bark—which did break with time. The cement damaged the joints, trapping moisture inside the brick. In winter, the waterlogged walls froze and cracked, allowing cold rain water to penetrate. In summer, as the brick tend to expand, its pressure for when literally popped off. "The cement started to not helping the wall, it is actually hurting the wall," says Mario Macchicelli.

Americans' reliance on masonry cement worsened him when he arrived here from Poland in 1977. He grew up building brick houses without a single grain of cement. The mortar he used contained simply three parts sand to one part lime putty, the ratio established in 30 B.C. by the great Roman military engineer Varro. These days, he buys 3-gallon buckets of cement-blended lime mortar, which cost about \$8 and hold enough to repoint the 16-inch joints on 60 square feet of wall. For the Rogers house, he had



As his final step, Mario Macchicelli hits the joints with a soft inside brush as the new mortar will match the roughness of the old. "I don't want it to look new," he says.

Instead, bricklayers adopted fast-setting masonry cement and ground limestone blended together with as much as 65 percent portland cement.

As Hue Like It

Like putty, colors in one color—white—but mortar stains in many shades and textures. If only color is important, the putty can be tinted in a range of hues using iron-oxide pigments, right. To match a mortar's texture on wall or other perfectly, some companies keep stocks of sand, which comes in as many shades as there are beaches. These companies analyze mortar to determine the type of sand they should add to replicate the recipe for the original mortar. They may not be able to touch down the exact lot that supplied the original sand, but they can get close.



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Lime Is No Lemon

Before the 1870s, when portland cement became commercially available, most masonry structures—the Egyptian pyramids included—were built using only lime and sand. “It’s the best mortar ever developed,” says Tim Meek, a leading Scottish authority on repairing historic buildings. The key to its superiority is the lime itself. (The ground-up limestone commonly added to masonry cement is some-



thing else entirely.) This is kiln-fired limestone, stacked for up to a year, until it turns into oyster-smooth brilliantly white putty. Blended with sand, the putty makes a mortar that’s permeable to water vapor and flexes with changes in temperature. If hairline cracks form, rain will wash some of the surrounding lime into the gaps, repairing them. Lime mixes are easy to chisel out when the time comes to repoint although, as Meek points out, that time may be a long way off. “I’ve seen 800-year-old castles with their original mortar, and they’re in fine shape,”

the original mason involved in its creation told the same story. The easy availability of lime to sand, the size and color of the sand grains and the compressive strength of the brick. The analysis is expensive (\$140), but he says he prefers to “know exactly what’s in it, rather than guess.” Even without the test, he gets a good idea of mortar type just from knowing the year a house was built. He double-checks his hunches by chiseling out a small piece of mortar and dropping it on the sidewalk. A piece containing a lot of cement makes a high-pitched snap; a chunk containing mostly lime makes a muffled clunk.

The right repointing technique ensures the work will last. At the Rogers house, John Machado takes chisel and hammer and starts raking the joints clean to a depth of 1 inch. He takes care not to break the brick-faced fire-clay, which protects the extremely soft core.

Chiseling is tedious, painstaking and, for cement-covered joints, frustratingly slow. It’s easy to see why repointing by hand costs as much as \$25 a square foot. Using an electric grinder with a diamond-tipped blade can cut the cost to \$5 per square foot, as long as the joints are more than 1/2 inch wide. But grinders must be handled with skill and restraint—on horizontal joints only, never on vertical—because these powerful tools are notorious for chipping bricks. The Machado men’s use them at all when restoring historic buildings.

Home owners who try to save money by back-patching (pushing new mortar over and without chiseling) are throwing their money away, Mario Machado says. At best, back-patching forms a weak connection between old and new mortar layers, at worst, it makes joints wider and more susceptible to water infiltration.

When John Machado finishes hand-chiseling, he squares the cut and draws dust out of the joints with a compressed-air-powered vacuum chisel. “The mortar breaths better to the clean, dusted surface of the brick,” his brother says. Mortar can’t bond to grime or wood shavings, brick and window casings, but loves a gap to be filled later with caulk.

“That’s a homeowner’s job, not a mason’s.” Before the younger Machado fills a joint, he soaks the wall with water to keep the mortar from drying too quickly. Then he scoops a glob of the sticky gray mix out of a bucket and taps his plasterer’s hawk. Holding the hawk up to the wall, he scrapes fresh mortar into the joint with a narrow rock-pointing trowel. He doesn’t fill the joint to the joint line. Instead, he makes dove to four pieces, each two pieces in a thin layer of mortar. What it becomes shrinkage-free, anywhere from 30 minutes to 24 hours later, he cuts off any protrusions with a pointing trowel. A few weeks later the bricks and the joints match the weathered look of the originals.

When finished, the new patches at the Rogers house are undetectable. As a hobby, both Machados are proud of that, although it once earned them some trouble. Mario Machado recalls “No one’s been in a customer after our repointing job, and he complained, ‘You haven’t even done the work yet!’” ■

Repointing Rules

1. **Whichever mortar has less** “In lack of its original depth, it’s time to get out the chisel and go to work.”
2. **Thoroughly rake out and** when joints are a depth twice the width of the joint.
3. **Do not chip, cut or remove** the brick’s fire-clay, which will accelerate decay.
4. **Make sure the brick is** stronger than the mortar. In general, houses built before 1800 have softer brick, which makes them likely candidates for old-style lime mortars. To know for sure, have an engineering lab analyze a batch for compressive strength.
5. **Repoint only when** temperatures remain between 40 and 60 degrees Fahrenheit, even at night. Cold makes mortar brittle, while heat dries it out and prevents bonding.
6. **Keep fresh lime mortar damp** for at least 3 days so it can hydrate before it dries. Taping plastic sheets over repointed areas will slow evaporation. After the sheets are removed, hose the wall periodically during dry spells to speed hardening.

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ACE

When fix-up problems pop up from out of the blue...

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LAND RUSH

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R

obert Berne and his wife had long wished for a house in the country, for the space and views their city home lacked. To make their wish come true, they bought a 1-acre parcel about a half-hour's drive from Detroit, on farmland that a developer had cut into 30 lots.

Then the couple—he's a neurologist, she's a hospice nurse—hired an architect. They liked the architect's design, except that the main rooms faced poor views to the west. No problem, said the architect. He could rotate the house so it looked out over the Bernes' pristine woodlot, if they cut down a 60-foot-high oak that stood where the garage would be. Too bad, but so be it, they said. The architect made the change, and the Bernes were ready to build their dream. Then reality got in the way.

When the Bernes showed the developer their plans, they learned, to their surprise, that he had the right to block construction that involved tree removal. He refused to sign off on their blueprints, so the architect worked out a new plan, which preserved the 100-year-old oak. But because the plan put the garage on a steep slope, the Bernes had to spend an extra \$10,000 for structural reinforcements. "We thought we'd planned for everything," says Berne. "But until a house is up, you don't know what 'everything' is."

Building on a piece of raw land may be the last frontier fantasy left in America. But it's also "one of the most complicated and potentially costly projects an individual can undertake," says Joe Meluskey, director of land

development section for the National Association of Home Builders. So complicated, in fact, that the National Association of Realtors established the Real Estate Land Institute, which trains and sends its brokers who want to specialize in undeveloped property and farmland. That kind of real estate differs from so-called developed plots, which typically come with roads and utilities as well as specific zoning and, as the Bureau belatedly discovered, developer requirements. Deals for both kinds of property must be thoroughly researched, says national president Roger Hillel, but, in addition, "With a developed lot, some of the issues that matter—the kind of house you can build—are more clearly defined. With raw land, finding out what you need to know takes more digging."

To avoid getting burned by speculators that turn out to be tough negotiators, prospective owners should be observant about finding out not only who others will allow them to do with their property but also what the land itself will permit. The sales contract, for instance, usually contains the developer's due diligence. From their contract, the buyers know that the developer had the right to approve lease plans and that he required levels of ordering and fire-hazard detached garages and freestanding sheds, but they missed the words about not cutting.

Other concerns come from federal, state and local agencies, often in both ways abundantly. "Private property is no longer the sacred cow that it once was in this country," says St. Louis land attorney Robert Desloer. "Land is subject to more and more government regulation." The feds, for example, have a good deal of authority over what can and can't be built on designated floodplains. A state may control the way a landowner's land connects with one of its rivers. A local government typically enforces zoning ordinances that specify how much house can go on how much land and how a well must be dug and a septic system installed. All three Big Builders may have setback requirements aimed at keeping construction away from vulnerable or sensitive areas such as wetlands, coastal, lake-side and riverbank property and Native American burial sites. "State and local governments frequently regulate setbacks and require more and more space between proposed structures and protected land," says Patricia French, a real-estate attorney in Wilton, Connecticut. "If you don't know that when you buy, you could be in for a surprise when you try to build."

Identify the seller or the seller's broker will disclose any and all information that could affect the buyer's development plans. Twenty-nine states require full disclosure, and the National Association of Realtors requires the same of all its agents. But a buyer has no way of knowing that a seller or agent has come across with all the facts. To close any information gap, says William Swanson, a

local broker and a member of the Real Estate Land Institute, "Go to town hall or the county courthouse to check out all the regulations yourself." Researching a broker or land deals may not only spend up the house research but also help you learn about a town's plans for future development—and making zoning changes—that could affect your project.

Yet even the most thorough research can't stop regulations from popping up in the space of a single planning and zoning department meeting, land-use information can be changed by legislation. Nine rules typically don't affect approved building plans, however, as long as they stay the same. "Try to amend your plans, and a zoning board may let you know what you want," says Desloer. It takes

important to review a town's or county's master plan. "You may think you are buying an isolated piece of land but find out that, in a few years, you could have a four-lane highway outside your house," says Michelson.

The county or local government can also be the place to investigate the availability of public services (water, sewer, electricity and roads). When the developer provides those services, a buyer need only ask about backup locations and tax assessments. In remote areas, where the landowner usually pays for the road, the well, the septic system and the power lines, costs can escalate shockingly. Much depends on whether the land has flat or rises steeply and whether draining water will come from a shallow or deep, and expensive, well.

Land's extreme variability makes it extremely important, before you buy, to test a property's suitability for development. The speculation (or post) test, which usually all state and local governments require, determines if the soil drains well enough to allow for a septic system. The property may also need environmental tests to make sure there is no toxic waste or other pollutants on the site or seeping across the property lines. A soil stability test, especially on sloped land, will confirm that the ground can support a house, and a drilling test will show if an adequate water supply can be developed.

None of all, expect to be surprised. When the Berners' builder dug the foundation for their house, he discovered a large amount of topsoil had been dumped on the lot. "If he had built on it, the house would have settled and cracked," says Berner, "so he had to do much more excavating to get down to solid ground." The buyers got lucky when the builder didn't do them for the extra digging and soil removal. They were unlucky, however, to the tune of about \$1,000 when their well-driller had to bore down on cars 180 feet to reach water. Still, the Berners, who moved into their country house 10 months after buying the land, have few regrets. But, says Raftery, "If we ever do this again, our eyes will be wide open." ■

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A R C H I T E C T U R E

BY DENNIS WEDLICK

IN TRANSITION

A patio or a deck should connect a house with the landscape



A patio off the family room of a house in East Hampton, New York, is "stamped" concrete with a color wash—a cost-effective alternative to stone. The ground has been leveled at the front edge of the patio to eliminate the need for steps. The railing will be removed when the driveway abuts the pool wall enough to provide a visual barrier.

One of the most challenging things to think about in house design is the transition between the inside and the outside. Almost everyone

wants some sort of outdoor living space near the house—a terrace, a deck, a patio, a pool area. These places for lounging and eating can make a house feel grander and more permanent, as if it has been there longer. Without them, a house can seem like a bus stop rather than a destination all its own.

Unfortunately, design experts tend to overlook these areas. Take, for example, the patio and steps leading from a house to a yard. Many architects say that's the province of a landscape architect. But many landscape architects say the job should go to the architect. The steps represent the edge of an architect's expertise and the edge of a landscape architect's expertise. Home owners rarely call upon both experts to help with these areas. Yet they are critical to the overall usability and success of a house. When designing a new house

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in evening, the outdoor space must be considered at the very start. Take a good look at the land around the house and around yourself while situated position is the first place. Then build accordingly.

People often missed their outdoor space simply by adding up a raised deck and tacking it on the back of the house. That sort of construction doesn't really respond to the architecture of the house, let alone the surrounding landscape. It covers deep, moist shadows beneath it, and it usually looks as though some sort of scaffolding has been erected. One can't help wondering when the project will end.

A raised terrace or patio of brick or stone can provide considerably more entrance than the average deck. Elevated on a bed of sand and gravel and supported with a sheet retaining wall, it should be high enough to appear to float above the surrounding land, but not quite as high as the porch or entryway from which it extends. Unlike a deck, a brick or stone patio doesn't sit on stilts, so it doesn't have that dark cavern below. It becomes an elegant, earth-bound transition between the house and the grass.

There's nothing wrong with trying the same approach with wood and decking material—particularly in very hot climates, when wood feels cooler than stone after baking in the sun. But keep the same principles in mind. Railings on a deck tend to separate people from the ground, and create a visual puzzle where they meet the house. Instead, keep the deck low, and let it cascade to the ground in gradual levels and steps. The final steps or laps should be no more than a few inches above the land. That way, you can drop the railings along with it.

The grading and the landscaping around a deck or patio are as important as the structure itself. For example, if the house is tucked into the woods and you have a low terrace or deck marking the forest, bring ferns and plantings up to the deck area, then add supporting masses that lead away from the patio to create a pathlike feeling, occasionally. Marge Radwick, a landscape architect in Philadelphia, With a wooden deck, try raising the path into a boardwalk. Or take the opposite idea. Suppose the deck or terrace overlooks a large open area and must provide a transition to a meadow or smooth lawn. All too often, this is when the climb

body is loaded on an expensive proposition that tends to show off the scale of the house and detract from the stage of the house sitting out and commanding the landscape. A more effective—and usually cheaper—solution is to grade the site directly and allow for warming changes in contour and elevation. The conditioned path can then stand on its own.

Another nighttime spot is the steps leading out from the house. The typical approach—building two or three quick steps down—does nothing to unite the indoor and outdoor areas. Far better are steps continuing a series of small landings that elongate the transition from one to the other, and make for a gentler passage. If you have a pool, you'll need to create a path that provides a similar transition from the deck, keeping in mind safety issues such as fencing to protect children. Again, for the best solution, write



Heard deck with the terrace floor, the terrace is part of Philab's house on Columbia County, New York, provides for a larger outdoor space than the original covered porch allowed. A slight cascade of the bricks gives the terrace a basket-weave effect, and the granite used for edging complements the color of the house.



the pool with the main area leading from the house to the water, rather than isolating it and handling it separately.

No matter what the site, the key to a good inside-outside design is to respect all three parts of the property—the house, the transition space and the land. The outdoor space people need is to see them as separate and distinct from each other. The magic occurs when they are linked as a whole, each leading to the next. ■

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THE MONEY PITSM

BY BROCK YATES



WATER TORTURE

Honey, the roof is leaking again.

I knew there was cause for alarm when our painter announced that he had

encountered a "small problem." A brown smudge had appeared on a fresh patch of wallpaper in a guest bedroom that my wife, Pamela, was redecorating prior to a much anticipated visit by some Manhattanites to Farmstead, our home in upstate New York. Because trouble always occurs in inverse relation to the time available to resolve it, I realized that the dreaded smudge was not a small problem that could be solved quickly. The blunder, located next to one of Farmstead's four brick chimneys, was clearly caused by a water leak and portended nightmare complications.

Old houses are prone to leaks, despite the best efforts of home owners to caulk, seal, paint and keep roofs watertight. Blame it on the weather. Most of the continental United States lies within the northern temperate zone, a meteorologist's nightmare for run-of-the-mill weather patterns. There are only a few places nationwide—Key West, Florida, and San Diego among them—that are not exposed to radical swings in temperature. Zigzags of 20 to 30 degrees Fahrenheit in a 24-hour period are

After a stormy week, Farmstead's main roof and chimney were in a state of emergency. "There's no other expense when you're an old house, especially an old stone house, without a few problems with leaks," he says.

PHOTOGRAPHS BY GUNTIN BACON

commingle and, in many basins, the high on the hottest day of the past month the low on the coldest day by more than 100 degrees. The thermomeric people cause thermal expansion and contraction in old houses' joints and seams upon entry, and there appears to be no way or inexpensive follow-up against thermal shock.

When we discovered the wallpaper smudge, Fenimore's chimney had recently been repointed and sealed. The roof, flues and joints were not even five years old. The attic had good insulation and ventilation, both of which help to minimize condensation and potential leakage. Yet the smudge was stark evidence that

Mother Nature had poked a hole in our armor. Or so it seemed until we discovered a tiny old water pipe, near a chandelier in the dining room, directly below the guest bedrooms. Maybe water was leaking down the chimney, then along ceiling joists to a few pipes as far as 35 feet from the presumed hole in the roof. Because old houses are rarely plumb or level, water can meander in directions that defy logic. Oh, someone suggested, the leak wasn't coming from the roof and chimney at all. Perhaps the source was an adjacent guest bath room.

I made emergency calls to the man who had installed the roof as well as to a plumber. But even wrench, driveway shoveling, volcanic eruptions and nuclear showers are easier to predict than the time that a roofer or plumber will show up during a crisis.

The plumber arrived first—over two days later. He immediately ripped up several sections of the floor to see if the leak might lie somewhere in the bathroom pipes. Finding nothing, he attacked the dining room ceiling, cheerfully missing the lovely plaster molding and the six French woodcut gossamer wallpaper. When Pamela returned home, she watched in horror as the plumber drilled three more gaping holes, all of which revealed nothing. Finally, he concluded that bathroom plumbing was not the culprit.

Our roofer, a wily lad named Scott who is fearless when it

comes to heights, surmised that the source of the leak must be closer to the source layer, a top Fenimore's 25-foot-high roof.

"Roofs leak because they are on top of the house. That's where the water leaks," he explained with Newscaster clarity. "I don't care what kind of material you use—the 30-year asphalt shingles many people favor up north, the fiberglass ones they like down south, old-fashioned cedar shakes. Spanish-style tile, copper cladding. You name it, I'll leak. Old houses are like old loaves. They rotch when it's hot. They shrivel when it's cold. Just me. When you throw a gable, a chimney, a cupola, a dormer or a windmill,

there's a potential for a leak. Maybe not today, maybe not tomorrow, but it's going to come."

After two days of poking, among the shingles and flaking above the guest-room fireplace, Scott found a dime-sized crack in the sealant between the chimney bricks and the side of the house. He shored up sagging mastic roofing cement over the rent around the crack, then put down a layer of fiberglass mesh and a final coat of mastic. Meanwhile, Pamela and I measured incense burners to the window sill.

Happily, we completed the repairs before our guests arrived. Fresh wallpaper was in place, and new plaster covered the plumber's facile proddings. All was back to normal, save for the \$1,100 hole the episode put in my home-owner's insurance policy plus the \$500 deductible I paid.

We thought our troubles were over. But 10 days later, what Pamela has come to refer to as "our mender of external

leaks" returned. The guest room storm that descended on the Northwest house apparently made another wound in Fenimore's armor. This time, water stains had appeared on a wall beside the dining-room fireplace. I've contacted roofer Scott, who will coordinate some a roof with more mastic and have plenty to say about the cause further of doing battle with Mother Nature. And I've placed another telephone call to my increasingly skeptical insurance agent, who remains unperturbed by thermal shocks. ■



Over the years, leaks ruined much of the French woodcut wallpaper hanging when Fenimore was built in 1912. After Yoko added the dining room with a flared patterned paper, he punctured a damaged panel of the original wallpaper and framed it with molding.



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LETTER from This Old House

DOG DAYS OF SUMMER



Around my house, summer is the time to finish projects. This year, I've been building reflux out back. Summer is also the time to throw open windows and let in breezes. But, as the hottest district of my suspect town north of Boston, that means living in the sound of tourist traffic too. Which is partly why I built a *tsukubai*, a Japanese water basin for ritual purification.

The sound of splashing water screens my garden from traffic noise and takes me back to 1990, when *The OM House* that I designed as a modular construction in Japan. In Kyoto, I fell in love with the temples, tea houses and gardens, and I resolved to build myself a *tsukubai*, which typically consists of a large upright basin stone flanked by several subsidiary stones, with a flat stepping-stone or ledge. The *tsukubai* exemplifies elements of Zen as elaborated by the great master Sen no Rikyū. A simple fountain sprout suggests a forest, moss-covered stones a range of mountains. The trickle of water echoes through the garden. "Zen—and life—a free-ing. Each stone, I learned, is supposed to have a face, so I searched for stones with faces. Then a friend gave me my principal stone, a 100-pounder, for my 40th birthday. Norm was building a house on a big stone with granite boulders, so I asked him for some more stones, and he told me to help myself. "No. You need to choose them—part of the Zen of the *tsukubai*," I replied. "Zen!" Norm said, but he chose them. I then had to find the "natural affinity" of the stones for one another. Every evening, I took an urn for and moved the big stone slightly, contemplated, then rolled it again. Natural affinity eventually revealed itself. I followed a hole in the big stone, using a worm drive saw with a diamond blade, and made a bamboo spout. Finally, I had to choose a pump—but what capacity? After experimenting with hose, pad and stopwatch, I settled on 120 gallons per hour. The water sounded like a mountain rhyolite. Perfect.

My house isn't Japanese. It looks more like last year's TV project in Milford, Massachusetts, but the *tsukubai* fits right in. Moss grows on the moss pad, so it turns out, the house's principal feature is my shaggy scolded poodle, Jane, who refuses to think from anything else. Instead of building an external garden ornament, I seem to have created New England's most elaborate dog dish. I can't help thinking that Sen no Rikyū, who delighted in integration, would have been pleased.

—Steve Thomas



ILLUSTRATION BY STEVEN SAVAGE



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blacksmith

Why Charlie Keller has to think hot

CHARLIE KELLER IS DANCING between thinking and doing. That's how he imagines his work as he takes up an iron poker and stokes the fire he has just built from soft Pennsylvania coal. The flames gently rise a foot, and the pace of iron Keller has put in the fire glows at 1,300 degrees Fahrenheit. He knows the temperature because the iron is bloodred. When he switches on the forge's blower, the flames lick higher and arc toward the mouth of the chimney. In the next few minutes, as Keller reaches his tools, the iron in the forge runs through the spectrum that acts as a blacksmith's thermometer:

Bloodred 1,100 degrees.
Dark cherry 1,300 degrees.
Orange 1,600 degrees.
Light yellow 2,300 degrees.
Dazzling white 3,000 degrees.

When her iron turns the color of dark cherry, the metal is soft enough to reshape with a hammer. At light yellow, it goes slick—resembling a glowing ice cube—and is ready to forge-weld. At dazzling white, it begins to decompose and flame like a Fourth of July sparkler. Keller knows what iron will do at each color as he forges replicas of colonial axes, spades and rakes; ladles, hoes and potato hooks; and, the tool he is making today for a New Zealand musician, a Kentucky axe.

Without giving it much thought, he reads the fire thermometer. Ten minutes at light cherry, he will hammer indentations where the Kentucky axe handle goes. When the axe head glows orange, he will remove it 30 times on his anvil with a 250-pound hammer to begin forging a cutting edge. When the lustrousness of the ax dulls, Keller will feel the hammer hammer more solid iron and will hear an concussion clanging at a higher pitch. Then he will know it is time to stop and plunge the ax back into the flames.

He will do these things as instinctively as a speed skater crouching more deeply at the base of a head wind. No analysis, all sensation, with mechanics and intuition layered upon each other seamlessly. In the way that, away from the risk, a skater could calculate the physics of wind resistance, Keller could check her month's coast Fahrenheit readings by turning to a chart in his book *Cognition and Tool Use: The Blacksmith at Work*, coauthored with his wife, anthropologist Janet Dixon Keller of the University of Illinois at Urbana-Champaign.

But he doesn't. In his blacksmith shop in rural Newman, Illinois, the exact temperatures on that chart might as well be written in a foreign language. It is the language of fire—and the language of experience, anyway. (continued on page 71)

an
american
craftsman

Keller's tools are similar to those used by Jacques Soufflot, who in 1870 built and opened the blacksmith shop in Newman, Illinois, where Keller works. A 1934 Little Giant top hammer delivers repeated blows for forging horses.





Using a pair of flat-jawed tongs, Keller removes a stick of iron from the coal-baked fire in flames that burn into the chimney. "In the summer, I sweat like anybody's business," he says. "I'd go through a gallon of water a day."

(Continued from page 61) motion, weight, balance, sound, sight and feel—that a blacksmith must read. Years ago, Keller was only a reader of words, a professor of metaphysics. His curiosity slowly pulled him into the world of craftsmanship, where ideas can't be distinguished from objects, thoughts can't be distinguished from labor—doing is thinking. Today, his laborer is to help the millions of us who no longer make things with our hands to appreciate the few of us who still do.

"Humans are makers," says Keller, a short, round, muscular 61-year-old with a graying beard and rough, thick hands. This morning he is working at the forge, smoke rising in beams of sunlight that shoot through his dim shop's few windows. The iron in the fire smells like a cast iron skillet that's been on a hot stove too long. "We have forgotten that, for two and a half million years, everyone made things," he says. Sometimes, when Keller is talking to an audience, colleagues agree that a craftsman shapes, sees, a little at a time because of dipping his own experience in lived-in form. Keller can only shake his head. His charming colleague says by his no idea how many thousands of chambers and millions of tiny experiences go into the handmaking of every simple tool. True, Keller will shake his head as the men speak, come out in the shop, and I'll give you a hammer.

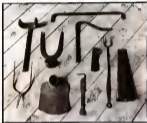
Keller was a California boy who was going to be a professional player, until he took an archaeology class in college. He got hooked. He earned his doctorate from the University of California at Berkeley and excavated African sites where people had made stone tools 400,000 years ago. His crew's dirt picks kept chipping, so he found a Lithuanian blacksmith to forge those shovels. For hours on end, Keller found himself watching the old man, wondering exactly how craftsmen thought about their work.

Keller was always handy. As a boy, he built model airplanes. As a teen, he rebuilt a '31 Ford. As a man, he worked on his own house, even remodeling the lower side of the kitchen of a tailor's wooden box to it would show through the wires, how to set the old Ford's exhaust to spin just the right amount of gas, how to calibrate the wires of a toaster so they'd end up toasting the correct 30 seconds over the rack's edge. But he also loved the doing. Laying raw steel over a shape, the asking to be hammer men, the smell of fire and sweat, his left hand reaching for a shingle, his fingertips feeling as tacky smooth from the hot iron, sliding the shingle into place, reaching for a hot hold in his mouth and pouring the nail in with three dead-on hammer blows. And doing it again, again and again. It was beyond ideas and words.

Yet he knew that, in many circumstances, physical labor is equivalent to the laws that machines bring to bear on a job—brilliant, brute power. Keller believed otherwise.

Physical labor wasn't him to think about but was a kind of intelligence. People often thought that a craftsman was closer to a craft master than to a thinker. Keller was a poet, because they didn't understand the meaning and duration of human nature that encompasses the work. But he figured there was only one way to reveal the meaning of thinking and doing.

"I needed to be taught something real." So 22 years ago, Keller decided to learn craft. Remembering his fascination with the Talmudic blacksmith, he moved to Santa Fe, New Mexico, and apprenticed himself to two his teachers. He cleaned floors, painted walls,



A collection of colonial-era tool and hardware replicas made by Keller from a log shop for housing timber. Inset: A wooden anvil, a pitchfork, a woodworker's hand saw, a doublet, a twisting fork and a rusted splitting wedge; on a cross is a pitchfork, a bar and a pair of tongs.

laid out—until he began blacksmithing, which to him always looks awfully simple, hard, barren, brief.

One day, Keller was trying to read the temperature of a piece of hot iron, held it with tongs in his left hand and over it like a stick of meat on a hot grill. He was, but his right hand to adjust the amount of coal he needed, make sure that when he was building up in the furnace and cooling the fire, which lay the iron so much lighter than at 1,600 degrees so he knew it had reached forging temperature, figure out when and he was going to use to shape the iron once he pulled it from the flames. No doubt, he was looking as confused as a gnat in a flypaper in a philosophy class when one of his mentors, standing in the shop, calmly making a cigarette, said, "Think too."

Think too? What the hell did that mean? In time, the old question revolved in meaning. A blacksmith must think as if he were his master, as if he were of men, well, alive. For woodworkers often imagine that their wood is its own life and help to grow the wood. A blacksmith will imagine that his tools are talking to him. A carpenter will



Tools and fixtures in Keller's shop include, from left, an English pattern used atop a stump with hammers leaning on it, a stock tub, a bench dog, the fire, various tongs and a top-hammer. The shop floor customarily accommodated horses brought in to be shod.

will imagine that his copper has agreed to be malleable.

A blacksmith must accept the nature of time and fire and tools—and think as they would, if they could. “Think hot” was practical and metaphorical advice, akin to a music teacher telling a student to relax and enjoy the music or a western race-car driver telling a novice to let the car drive itself. The suggestions mean, working at last, most likely that in those who will eventually be the best mechanics,匠人 desire and craftsmanship, the advice poses a mental and emotional strain toward things that is beyond words.

That day, though, Keller was a long way from beyond anything. He first had to learn to get the right striking angle he must stand square to his anvil with his foot in a baseball bat or the stance, that is, thick, long, narrow or spread but iron he must use a metal hammer, but to strengthen toward iron he must use a wooden mallet, that the forge's firebox must be large enough to allow most of the copper to be contained, or oxidation will pit the steel, that a 1/2-inch-thick steel bar heated to 2,500 degrees may be enough to forge in only 60 seconds, that when punching a hole in hot iron, he must feel the first strike when the punch no longer inflicts the iron, because an extra hammer blow will bury the punch in cold iron, like King Arthur's sword as the sword, that a knife blade's balance must be determined by its feel in the hand, and that when iron reaches forge-welding temperature it resists an almost imperceptible quench.

And there were never doubts. In hot heat, Keller had to learn to create a picture of the object he hoped to make and then to imagine all the steps between. This imagery, as he came to call it, demanded not only experience but retrospective knowledge: the ability to look at finished objects by other craftsmen and to work backward to unravel the steps taken to make those pieces. From this, Keller learned the unspoken rules

blacksmiths share: Made objects should look as if they grew that way.

So they must be forged hot in 50-second intervals, because cold-hammered iron looks stiff and lifeless. The revelation to Keller was that blacksmiths don't create these final objects—they reverse what a wise man knows and master to be able to make the objects. As much as any individual, they reverse knowledge.

“It's knowing for doing.”

People often think of craftsmen as craftsmen—mechanics whose skill grows from learning, patience and repetition. Keller came to reject that idea. “Craftsmanship is not common sense. What craftsmen do isn't automatic. It is hard-learned and complex and visual and intellectual. Always, there's a risk of failure. That's the rub.” Over the years, Keller came to understand why craftsmen are often so bad at describing how they work. “They aren't verbal because the knowledge isn't verbal.” Could Charlie Parker have put his saxophone playing into words? Could Lawrence Oliver have explained how he became Huckle? Could Janet Fennel elucidate what happened when she let the water? Keller discovered that competitive

swimmers move more slowly when they think too much about stroke techniques. Musicians play worse. Performers act stiffly.

“A lot of casual people really do think manual labor is of a lower order,” Keller says. “But labor isn't just the means to the thrill of being done. There is satisfaction to the labor itself. Passion for the work grows from the feeling you are doing the work.” He compares it to the power's riffs. “It's saying from the inside, mind and physical are as important in developing confidence in language and that this intelligence is acquired from interacting with objects. The career profound implication for a society where we no longer produce anything.”

Finally, after 15 years of blacksmithing, so enriched, Charlie Keller commanded the anthropologist's gratitude—the worst motive. He quit teaching and bought a share of an 1870 blacksmith shop that was being used for storage. Today, he and replicators are in constant and at first clumsy ways in more than two dozen states and several countries. His tools appear in the film *The Last of the Blacksmiths*. A few years ago, *Early American Life Magazine* named Keller one of the 100 traditional craftsmen in the United States. Yet, at night, he will review academic articles about the mind of the craftsman.

“I want the recognition of these men recognized.”

By the end of the workshop, Keller is drenched in sweat. The temperature at the forge can rise to 130 degrees. Today, he has put the piece of his Kentucky on head in the fire and takes them out again probably a hundred times, large welded them together and hammered out the rough shape of a cooking edge. He has swung his hammer maybe a thousand times. He's tired and filthy. Grime is colored under his nails, and much outlines the wrinkles on his neck. He wipes a streak of ash from his forehead. “That's why philosophers don't want to deal with this stuff,” he says, laughing. “It's too dirty.” ■



Keller shapes the cooking edge of a Kentucky on head. He swings his 2½-pound hammer until the piece begins to sing sharply, indicating that the iron has cooled too much and must be reheated.



D r e a m H o u s e

Modern on the inside, warm and familiar on the outside,
a roomy, handsome triumph of design

BY JENNY ALLEN ILLUSTRATION BY MICHAEL McCANN

We love old houses because they've endured. We know those thick walls have kept other families warm and safe and will do the same for ours. The materials and workmanship in old houses are measuring, even when they show their age. If the stairs squeak and the thresholds are foot-worn, so much the better, like people, houses are more interesting for their eccentricities. But wonderful, properly kept period houses can be tough to find. Those cute bungalows and gracious 1920s Colonial Revivals have great nostalgic charm—winecooling in the dining room, arched doorways, expressive moldings, even eyebrow windows. But can you find one that's just the right size for your family, in the right neighborhood, with good schools close by? And if you can't, how much of a renovation project are you willing to take on?

Looking for a great old house can make even a fanatic peer at the latest development of new houses just down the road. New houses have the features we crave: lots of light, roomier rooms, huge kitchens, master suites, media rooms and walk-in pantries. And they don't need anything but curtains. Yet freshly minted houses tend to be short on character. The rooms have flat and featureless moldings, the windows are divided by plastic snap-on muntins, the floors are covered by carpeting—not hardwood—and the doors are weightless. Worse, many new houses look self-important and silly outside—do you really want to live in a developer's version of a French chateau?

To show how a new house could be designed with all the charm, reassuring warmth and thoughtful detail found in a typical *This Old House* renovation, we went to Robert A.M. Stern, a premier American house architect. His hallmark: romantic Shingle Style houses that recall the rambling late-19th-century "cottages" (some are enormous) built up and down the Eastern Seaboard. His designs are casually elegant and as familiar as khakis, jazz and wooden station wagons. On the following pages you'll see what the collaboration between Stern, *This Old House* and Connecticut builder Walter Cromwell has wrought—our newest Dream House. Join us as we build it and discover how every room of our house contains ideas that will work in your house.

master of the house

PHOTOGRAPH BY MICHAEL McLAUGHLIN



On a Sunday afternoon in early spring, Robert A.M. Stern is so appreciated for time, he's seeing staffers in his office in half-hour slots. "Hurry up!" he greets a slow-moving visitor, "or I'll go to my next appointment." His Manhattan firm, which he founded more than 20 years ago, endow includes 130 architects and designers, is always busy. People here are used to working on weekends.

Stern, 69, has just returned from Nashville, where the firm is competing to design the city's new public library; next week he will fly to Boston for a meeting with Harvard University administrators about the business school student center he is designing. A day later he's off to California to talk about plans

for a hospital in Santa Monica. Other projects abound, including the Gish new San Francisco headquarters, a residential hall for Columbia University and the new Newell Storytelling Center in Tennessee.

Stern's overflowing schedule keeps him in perpetual motion, whizzing busily through the firm's light-filled, loftlike spaces, calling out instructions, disappearing into the elevator and off to another client meeting. But as the evening, he's actually sitting still, a flower propped on a conference table, fully engaged in talking about the Dream House project. He has designed everything from the table settings for Rockefeller Center's Rainbow Room to Disney's Animation Center (topped by a six-story replica of Mickey's hat from Fantasia), and he has hosted a public television series on American architecture, a subject he teaches at Columbia University. But houses are his favorite topic, and he is an outspoken critic of what has happened to them.

"Americans have been robbed of their heritage," he says. "After the second World War, our simple family dwellings became debased. Its fact, saying they're debased doesn't begin to describe it." In the post-war years there were too many houses to build and not enough architects. Design ended up in the hands of developers. And what did they create? "Kitching-lounges," Stern says. "Kitching," a lack of detail and architectural merit, but are decorated by big groups doing facing the street ("like having your garbier out front") and set next to dozens of identical-looking neighbors ("many designs repeated endlessly in debilitation"). Interior spaces are too open and ill-defined ("there's not enough walls there's no place to put a piece of"). Bathrooms, another target of his, are, are often too large (their master beds "are revealingly big, they're like theaters,") or too small ("a master powder room, you can sit on the toilet and knock your teeth at the same time").

Although Stern's criticism, and the bulk of his residential work, runs on the \$2,000- to 20,000-a-year price range, he has designed for wealthy clients, he has created some controversially sized homes as well, including plans for a 2,100-square-foot house that Life magazine in 1994 that have been bought by hundreds of people across the country. He has served as town planner for several international communities, such as Disney's Celebration in Florida, which is dominated by average-sized houses.

With a splash of history, Stern has created spectacular Spanish Colonial, Georgian, neoclassical houses and Italianate villas, but his signature designs are interpretations of the spreading, romantic Shingle Style houses that had their glory days just before the turn of the century. Originally vacation homes for the rich—the New England coast is dotted with them—they show an eclectic embrace of classical elements (columns and cornices) and romantic elements (shingles, gables and towers). They're meant to look playful and evocative. "Very few forms are endowing and welcoming at the same time," says Stern. Unlike, say, the Greek Revival style, which seeks to impress, "the Shingle Style is inherently a cottage style." It's representative. These important shingles are "meant to show the softening effects of time." The pattern provides "a place for a living room for all the world to use." Their rambling quality is charming and makes the houses seem less large.

Stern's growth has been to create that wit all nostalgia for the past, even if our parents also past took place in a rambling house. "These houses—gables, towers, columns—have a strong appeal to Americans whether they're a person's generation or a literary one. They're deep in the American culture, and we're infused by the dreams and aspirations of our culture, not just by our local experiences."

But Stern's houses aren't defined only by their handsome exteriors. "They're a framework for family life," he says, "a response to how people live." He is less than about making interior spaces work. Is there enough room for the sofa? Does the bedroom owner have enough space to lie up straight? The rooms he creates are in perfect proportion, well-proportioned and well-lit as huge baths. His floor plans include communal spaces with more private ones, "places where you can hide or have a quiet moment." Modern architecture's contributions show up in Stern's work, but indirectly. Stern's houses have more light, more windows and more bedrooms than Shingle Style houses of the past. But he is reluctant to credit modern architecture with too much. The dramatic interior views of his houses are not a tribute to modernism's flowing spaces, as one might assume, but to the Shingle Style itself, rooted in one of nature's best things.

Openness "is at the heart of the Shingle Style," he says. "So I guess you could say that what just passed corner created."

STERN STYLE

Much of the warmth and culture in Stern's architecture comes in big and fully details that create and respect choice, familiar forms, such as the ones below, which are incorporated into his own homes.



Each side shingles and an oval window door adds whimsy to a public space.



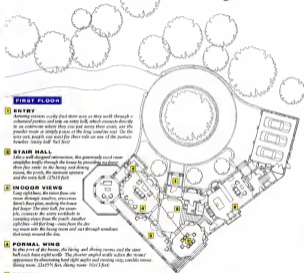
A four-story tower anchors the house and provides an striking focal point.



Columns and an arched window add classical formality to a wall and roof.



A fluted Doric column defines and distinguishes the house's main entry.

a p l a n
w i t h w i n g s

FIRST FLOOR

- 1 ENTRY**
Arriving visitors easily find their way as they walk through a circular portico and onto an entry hall, which connects directly to an anteroom where they can put away their coats, use the powder room or simply pass on the long window seat. On the way out, people can wait for their ride on one of the portico benches (entry hall: 7x13 feet).
- 2 STAIR HALL**
Like a well-designed intersection, this generously sized room simplifies traffic through the house by providing no fewer than five exits: to the living and dining rooms, the porch, the morning apartment and the entry hall. (27x19 feet)
- 3 INGOING VIEWS**
Long sight lines, the views from one room through another, encourage Stern's floor plan, making the house feel larger. The stair hall, for example, connects the entry vestibule to sweeping views from the porch. Another sight line—40 feet long—runs from the dining room into the living room and out through windows that wrap around the din.
- 4 FORMAL WING**
In this part of the house, the living and dining rooms and the stair hall each have eight walls. The shorter angled walls define the master's approach by eliminating hard right angles and creating cozy, candle rooms (living room: 21x29½ feet; dining room: 16x21 feet).
- 5 PORCH**
Known for his expansive covered verandas, Stern placed this one in front of the property's best view. Ranging in width from 11 to 28 feet, it contains more than 730 square feet of protected outdoor living space, plenty of room for a crowd. (56 feet long)
- 6 FAMILY WING**
Placing the garage and the everyday living spaces—the kitchen, eating nook, family room and mudroom—right in one area makes a long house seem shorter and easier to navigate. Stern from the mudroom provides a quick route to bedrooms, laundry room and house room (bachelor's pantry: 6x1 feet; kitchen/dining area: 21x21 feet; family room: 21x21 feet; mudroom: 6x12 feet; garage: 21x22 feet).

No one knows what a Robert A.M. Stern house will look like until the floor plan is done. "The house has to work with the way people intend to use it and also with the site," says Dream House project architect Gary Brewer. The elegant corners, the classic columns and the many other eye-catching elements that typify Stern's designs all await the map of room locations and sizes.

The Dream House floor plan owes little to the boxy rectangle that usually describes a house's footprint. It takes no fewer than three turns, forming an arc that wraps around a circular driveway. And it is long, extending nearly 200 feet from the tower to the garage. The arc's enclosure makes the entry private and intimate, says Brewer, and helps create a sense that the house has been there for a long time. "It will look as though a series of additions have been built on over the years," he says. Local setback requirements also influenced the house's shape and dimension, but Stern and his colleagues played every rule to their advantage in creating a rambling house of wings designed for everyday living and for special occasions. One wing collects the rooms where the family will most often gather: an eat-in kitchen and a mini living room. The other wing will entertain, wine and dine guests in large, formal rooms that extend graciously out to a covered porch.

Stern's plan also conquers boring boxiness on the inside. With more than 50 windows, several window seats, shaped ceilings and lots of built-ins, Stern has created a masterpiece of interior architecture. "Moving from one end of the house to the other," he says, "is going to be a visual adventure." —Joe Carter



Facing a wall full of Dream House plans, Robert A.M. Stern and project architect Gary Brewer critique and modify their work.

SECOND FLOOR



- 1 TOWER**
The tower's role can change with its owner's needs, from a nursery all the way to bedroom to a sitting room or even a bright home office with a superb view. (17½ feet in diameter)
- 2 MASTER SUITE**
Occupying its entire apartment wing, this room creates a focus-filled living space complete with a bedroom fireplace and a pair of balconies (bedroom: 20x17 feet; bathroom: 7½x13 feet).
- 3 HALLWAY**
Brightened by a trio of dormers and fitted with closets, bookshelves or window seats, this passageway promises to be at least big and useful as the rooms it leads to. (21½ feet long)
- 4 KID'S WING**
Parents keep their privacy and children live on their own in a pair of bedrooms with ample closet, desk and sitting space and a shared bathroom (bedroom: 12x12 feet; bathroom: 6x10 feet; bedroom: 7½x13 feet).
- 5 LAUNDRY**
No longer buried in the basement, a modern laundry gets under the clothes on, using features it'll also serve as a second-floor utility room. (16½ feet)
- 6 BONUS**
The garage roof creates another usable room that can become a rec room with a pool table, a bedroom for an in-law or simply a place where kids can play in a rainy day. (21x21 feet)

p r i m e
r e a l
e s t a t e

PHOTOGRAPH BY GRANT DELIN

Walter Cromwell, lucky man, stomps around the field where he'll soon build his dream house. Set a couple of hundred yards back from a twisting two-lane road in Wilton, Connecticut, the rectangular 2-acre lot climbs 38 feet up a gentle slope that almost flattens out at the high eastern end. Reaching the top, where the house will stand, Cromwell looks west to the hills and ridges beyond. "I love this view," he says.

After a mild, snowless winter, spring has come early. Thick, rough grass blankets the land in a rich lime green, as it did a year ago when Cromwell, 32, first saw it. He'd heard that the owner was selling off a couple of acres from a larger parcel and hurried over the next day to take a look. "I stood here and I said to myself, 'I've got to get this guy's phone number.'" Seven months later, the land was his.

Even before the deal was done, Cromwell had begun designing the house that he and Julie, his wife of eight months, would move into. It was no coincidence that they wanted a Shingle Style with picturesque dormers, columns and a tower, very much in the manner of Robert A.M. Stern. Cromwell discovered Stern's designs while an architecture student at Syracuse University and was drawn to their familiar sensibility by the way they were done. After graduation, he began designing and building houses—well-reviewed by Stern's work—in wealthy New Canaan. For his own house, Cromwell imagined doing up a formal structure that looked out over his field and cradled that view.

Last summer, however, the response approached him with another idea: World Country Club Homes—the company owned by Cromwell and his sister, Carolyn Wilcox—be interested in building a house designed by Robert A.M. Stern? The chance to work with Stern appealed to Cromwell. "I was intrigued," he says, "aware to that Carolyn or Julie because they weren't as familiar with Stern's work." There was just one problem: Finding land.

In an area filled up with more estates, habitable parcels were increasingly hard to find. The view Wilcox looked at was not too close to the road, too rocky or too expensive. "I felt like the opportunity was slipping away," he says. Then one night, Cromwell realized he already had the land, his 2-acre field.

A few weeks after the epiphany, Gary Sawyer, Stern's project architect, showed the Cromwells what their house was going to look like. He had visited the site and worked with Stern to develop the clay model and preliminary drawings that now covered most of a

conference table at the firm's Manhattan office overlooking the Hudson River. The Cromwells were stumped. Best in three plans, the house looked as if it had looked odd to them, and as overall an impression wasn't what they'd imagined. Instead of seeing an imposing frame facade reached by an impressive drive coast, what is approaching the house would see just the end with the tower and the covered porch that ran along the back. As the Cromwells asked and asked, they listened to Sawyer's explanation.

A conventional hoodlum plan, he said, would make the porch and living room face the rear of the property, where they would look out on little more than a short stretch of open ground and a scrub-landed meadow. The scheme that Stern worked out gave those acres—porch, living room, kitchen, family room and entry bedrooms—the property's best and brightest view. "With this house," Stern would later say, "you grab for the view, you grab for the light." By morning's end, Wilcox and Julie were convinced. "The house," says Wilcox, "will sort of unfold to you."

In their next meeting, Sawyer showed the Cromwells new set of drawings that included more of the features they wanted: a sun of small, medium and large rooms, an assortment of arches, nooks and alcoves. "That's a lot of playfulness in the plan," Cromwell says.

Soon after the tower passed the preliminary, Cromwell's contractor named a road into the slope, and construction began arriving at the site. "My rules are gone," Cromwell says. "My form builder and his family, my electrician, my plumber and my air-conditioning guy, they're all here with me since I can remember. We're raising to go." ■



Builder and owner. Standing on their 2-acre grounds, Walter Cromwell, his wife, Julie, sister, and Carolyn Wilcox, his sister and business partner, face the same view from the Dream House and take a moment to enjoy it.

To assure that the coils remained cooler with more air stirred for sale, the installers cover the opening they've cut with a pair of metal louvers. Generous on the looks of the house, you keep bugs at bay.



BIG CHILLER

Better and cheaper than an air conditioner

ABOVE: This Old House's Richard Trethewey beams through an air duct, which mounts in the ceiling and directs warm air into the attic when the cooler runs.

When the Arizona sun glares down from a sky as hot and dry as a steel griddle and the rattlesnakes slither out to warm their blood, veteran desert dwellers just mop a moist brow, smile wanly and shrug. "But it's dry heat." The shrug helps, but not as much as air-conditioning. Makes you wonder what people did before air-conditioning.

What they did, says This Old House plumbing and heating contractor Richard Trethewey, was switch on their evaporative coolers, or "eevaps." Richard says these old-fashioned chillers have benefits for even the most up-to-date home owners. They can operate more efficiently than air conditioners, sucking in great gulps of fresh air all day, cooling it 30 degrees or more and forcing warm air out through windows or ducts into the attic. They cost half as much as central air-conditioning (less than \$1,500 to buy and install the largest unit) and consume a third as much electricity. With the energy saved

BY JACK MCCLINTOCK PHOTOGRAPHS BY ERIC O'CONNELL



ADD-TO: Evaporative coolers often come free on buy-down or as an upgrade, hanging outside walls or just on the ground. To prevent dust drift, the new stuff has 30-by-40-by-40-inch and 30-by-40-by-40-inch mesh screens. Meeting the cooler's 4,000-cfm requirement without drawing it down requires a big, 16-inch-diameter duct, which connects to the house's existing air-conditioning ducts.

when they're used in place of high-gallon and central air, evapo can pay for themselves in two to five years. All this from a \$50-pound boxwood cooler that there were from General Air Conditioning here just installed at Mark and Jodel Tomic's house in Phoenix.

The evaporative cooler employs a basic physical law with some very simple hardware. The sheet-metal exterior covers a long blower, a thick, layered pad made of compressed paper, stone, or sponge, a float valve like that on a toilet tank, a small pump, and some plastic tubing. Water enters through a copper tube and fills the reservoir to a level determined by the float valve. When a house thermostat senses the heat, the pump and blower turn on. The pump pushes water through a plastic tube to the top of the pad, where it trickles out and soaks the pad. The blower sucks hot, dry outdoor air through the pad, which cools the air and propels it into the house's ductwork, cooling the house.

The cooling occurs because the hot air picks up some of the heat on its way through the pad, turning a liquid (water) into a gas (water vapor). A sweaty person in front of a fan feels cooler for the same reason.

A Cooler Cooler

For a machine as simple and anchoring as the evaporative cooler, there had to be room for improvement. In the 1990s, industry engineers borrowed a feature from commercial-grade chillers and came up with a better design for houses—the two-stage cooler.

In the first stage—the key innovation—water trickles down the back exchanger that sits in front of the pad. As incoming air passes through the exchanger, it cools down as much as 20 degrees, but never below room temperature. When air then goes through the pad—the second exchanger—it cools another 20 degrees, resulting in a chill that beats the temperature drop of the decades-old design by 8 to 18 degrees. And because pre-cooled air picks up less moisture from the pad, air reaching the house is also drier.

The sum of these gains, says engineering consultant Pat O'Rourke, bodes well for the future of evaporative cooling. The cooler, after all, is not a two-stage machine, he says, merely expands its geographical territory and extends seasonal effectiveness. "Two-stage technology brings the industry to a higher level," he adds. "It's really the Götting of coolers." —Mae Plazett

son. As sweat evaporates, it takes heat from the skin. Having absorbed the water vapor, the air that blows out of the box is not only cooler than when it went in, it's also wetter. Dry desert air can absorb a lot of water and thus produce a lot of cooling. In humid regions, the already moist air can't carry much more vapor, which makes evaporative cooling less effective. "You can't get away from physics," says Richard.

Paul Marver, General's general manager, proudly touts the technology "promise." Richard cheerfully agrees: "It's all for high ends, but we're desperate older technologies like that that make the most of nature and really work. It's interesting."

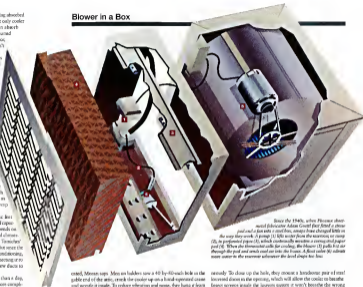
Until recently (see story below), little had changed in the very strange work. They still work best in arid regions like the American Southwest, but, says Roy O'Rourke, an engineer who holds patents on evaporative cooling technology, evapo are effective "anywhere west of the Mississippi and 30 miles inland [from the Pacific Ocean], wherever the relative humidity stays below 20 percent." A recent Environmental Protection Agency report concludes that only 1 percent of Americans have evaporative coolers, but that at least 15 percent could benefit from them.

An evapo can also work in tandem with an air-conditioning system, as it will at the Tomich's in Phoenix, where most houses have evaporative coolers, the rainy season that stretches from July through August produces enough rain that the Tomichs, like many other Phoenixans, have to switch on their air conditioning to lower the humidity as well as the heat. But for most of their cooling season, an evapo will keep the house comfortable.

Rated by the amount of air they can move in cubic feet per minute, or cfm, evaporative coolers come in a range of capacities, 1,500 to 6,500 cfm for houses, and the choice depends on floor area, the number and type of windows and the local climate. O'Rourke figured that a 2,500-square-foot house like the Tomich's would need over 4,500 cfm units for complete cooling. But since the goal is to supplement, not replace, 6 tons of central air conditioning, Marver is installing a single 4,500-cfm cooler and connecting it to the existing ductwork. His workers will also install new ducts to a couple of rooms served by a separate air conditioner.

A typical cooling installation takes two workers less than a day, but the site-work job at the Tomich's house is far more complex.

Blower in a Box



Since the 1940s, when Phoenix sheet-metal fabricator Adams Gear fitted a three-pump and a fan into a steel box, evapo have changed little in the way they work. A pump (A) lifts water from the reservoir or sump (B) to perforated pipes (C), which continuously wet a cooling pad (D). When the thermostat calls for cooling, the blower (E) pulls hot air through the pad and sends cool air into the house. A float valve (F) admits more water to the reservoir whenever the level drops too low.

ated, Marver says. Men as ladder saw a 40-by-60-inch hole in the gable end of the attic, crinkled the cooler up into a hand-spread cone and sealed it inside. To reduce vibrations and noise, they hung a beam of rubber with metal struts and threaded rods, placing the lowered air intake just a few inches from the window air. Then they put a shallow galvanized steel pan under the cooler to collect any seasonal overflow and ran some PVC drainage through the wall and down to a floor drain on the ground. With a length of 18-inch-diameter metal duct, they connected the cooler to the air-conditioning supply duct, about 10 feet away in basement; changes, a sort of one-way air valve, kept conditioned air from blowing back into the cooler. To keep air moving, they cut 16-inch copper tubing and ran it into the second cold-water line. Giving power to the 1,300-watt blower and pump only requires wiring them to a junction box on the same circuit that powers the air conditioning, which the electrical code allows because the two systems never run simultaneously.

ready. To close up the hole, they mount a hand-made pair of metal brackets down in the opening, which will allow the cooler to breathe. Then screws inside the house square it won't breathe the wrong thing. No screws above won't keep the water completely close. With so much water flowing into the reservoir and onto the pad, materials and workers must be carefully selected. In spring, before the onset of hot weather, the unit must be cleaned of animal droppings. The pad itself also has to be rinsed off and, about every five years, replaced.

It is mid-summer and hot in the attic when Richard and the others, sweating and covered with oily smudges, finish up. A raincoat, opens the water valve, and the water slowly fills. Then the pump clicks on, and water dribbles over the pad. Richard climbs down the ladder, goes inside and stands under the living room register with his palm held like a cursor to the flow. The blower begins to spin. Chilly air flows into the room, and Richard smiles. "Slowly," he says. In a few minutes, he decides for his second shot. ■



Convert a church into a livable house? Norm and Steve wondered aloud if it could be done, but a final look proves that all it takes is

amazing grace

BY BRAD LEMLEY

PHOTOGRAPHS BY DAVID PETERSON STYLED BY MICHIO OKIMOTO

Home owners Mark Deonik and Laura Ann Deonik, relaxing in the kitchen, were married just a week before moving in. The 33-by-35-foot living room, left, formerly the chapel, has flooring and beams made of Douglas fir, arched windows that once held stained glass, and plenty of room for art.





The absence of visible counter-weights, clearly shows primary joints and open storage reveals an emphasis on both aesthetics and performance. This is "not a difficult unimpeachable design," says Dorsch.

"This is a lovely central space," said T.O.H. executive producer Gary Merrill when the design consultation began. But the disallowing 20-by-25-foot restriction about the location of Dorell's room, his closet and the 14-foot ceiling—his upper cabinet that snugly fits the room and holds open storage and distinctive shelve-like doors.



running like a lottery winner. This Old House producer Bruce Irving spreads his arms to embrace the 1,075-square-foot chapel-cone living room of the TV show's winter project house in San Francisco. "Television producers are professional worriers so, when one smiles, the heart gladdens. In all the years we've done this," he says, his praise reverberating in the expanse, "this is the coolest, happiest project."

Yet living and the rest of the T.O.H. crew did plenty of bow-knitting during the conversion of this non-40th-century church into a young couple's residence. The miserably scaled design elements that baffle owner and designer Mark Dreasko specified seemed likely to be too bold for a house. As laborers schlepped in one and a half tons of marble wainscoting, 15-pound cabinet hinges, a stove that resembles an iron agate and Clydesdale-size stainless doors for the entry, T.O.H. plumb- ing and heating contractor Richard Trochewy fringed along with the rest of the crew: "I thought the place would end up looking like Grand Central station."

Now that each room has been planned, nailed, glued, bolted or hung, it's clear that Dworkin—working closely with architect Barbara Chambers—brought inspiring vision to this sprawling project. His secret: setting the inspirational elements against



REVIEW WATCH

This is our final story about the TV show's winter project, which aired earlier this year (linked house, above). Meanwhile, we introduce the role of a mid-1800s house in Watertown, Mass.



It's no accident that this end of the bar has a rustic, industrial look. Dorrill and Bishop drew inspiration from a former New York City eatery, called *Baldwin*, which makes a *Panama* restaurant's look.

a minimalist canvas of pristine white walls and streamlined trim. "I had my doubts at first, but it's a fabulous space," says T.O.H. host Steve Thomas. "Nice, finally, I sit at."

Dorrill, a store designer for the Gap, drew inspiration from subway platforms, banks, schoolhouses and other public spaces, particularly those built in the epidemic 1920s. As he says, Laurel Ann Bishop, says, "We both love these buildings. When I'm standing in line at a bank, I'm not bored. I always bring my camera when I go out. I'm looking around and taking pictures."

"Ninety-nine percent of our clients are amateurs when it comes to knowing what they want with a design," says the show's executive producer, Ram Menon. "Here, we were working with a professional who makes decisions like this all the time, and it showed from the first day."

"This is really our design living room," Bishop says of the chapel, where she and Dorrill have arranged their eclectic furniture—drawn from the markets in Paris, London, New York City and Los Angeles. The church's cathedral ceilings peak at 24 feet, creating a soaring space that might overtake most home owners. But 15 years of sweating about in cramped urban apartments handed big-room furniture in the couple. At the wrap party for the show's final episode, visitors congregated around the table in the new fireplace, a shallow *Orson* Standard design with a 3-foot-high opening lined in Italian slate. The standard-sized fireplace screen that someone arranged for the inaugural live appeared a "bit out of scale," Dorrill dryly commented. "It has something back. A large sheet of tempered glass on stainless-steel legs, maybe." Problems with scale led to



"The idea was to make it industrial yet warm," says Bishop of the 10-by-15-foot master bedroom. Marble tiling, a ceiling and a 1940s-style chandelier (which provides commercial customers, but a stained *Design* for *Home*—a small byproduct of the show—both make and feel completely home.

He solved throughout the house. In the kitchen, Demark designed custom built cabinetry that stretches in the left wing. He and Finberg will reach the top rank via a 7½-foot stained birch library ladder that rolls on chrome plated rails. The island's countertop is made of marble slabs rippled from a public art room. "We needed it really well," he says with a grin. A 4-by-5-foot chandelier, the home's centerpiece, came from a schoolhouse across in a wall.

Upstairs, the 10-by-10-foot master bathroom death the master of the couple's adulterous nest. The huge machine was snatched from a hallway in San Francisco's Chevron building soon off a pair of century-old, 180-pound parent's beds in wicker chairs. The bedrooms, by contrast, are clean and spare. "We wanted to keep it simple," Bishop says. Oh, says her husband, "Innocent, but not bland. That's what we're aiming for."

Throughout the house's 1,480 square feet of living space, they let power halogens spotlight surfaces and textures, rather than washing whole rooms with light. "It's a visual-space approach, and it's very dramatic," says Louis O'Connor, who worked with Dorazio on the lighting design. "You get a 'punch' instead of a big, washed-out space." In a Cup store, punch moves merchandise. In the house, it creates intimacy in rooms that might otherwise make cynics sneer.

Nearly as impressive as Denmark's design is the sustained regeneration that supports it. The building—on San Francisco's up-and-coming Sausalito neighborhood—posed challenges. The chapel, built just a few months after the city-leaving earthquake of 1906, featured no saguaro-type addition from the 1940s. As a whole, the structure was "not good," Morosoff says. "It had no visual garden whatsoever. It had no deck. It was bare—a sort of located on a view."

As the project's start in January, framing contractor J. Gregg spent weeks reinforcing walls and the foundation with galvanized steel straps and bolts to bolster the original chapel building's aching quake resistance. Most worrisome was the union—or lack of one—between the chapel and the addition. "Really, they just sort of leaned against each other," Gregg says. "There was no structural connection at all." It was time for some seismic engineering.

While Gungy and his team replaced \$45,000 worth of earthquake-damaged steel, general contractor Don Plummer concentrated on reworking the concrete exterior. He had to. Week after week, he postponed exterior work as El Niño deluge rains pounded the cliffhoppers. "It was a real hassle, at times, keeping the whole crew busy inside."

Trudging to the distant Douglas's residence, her arms crumpled with ached palms and aching joints spent three arduous weeks on the chapel floor, Douglas's sister transcribed "just to lighten up the color a little," says Plummer, who warned that sand blasting the stones would damage the wood. Simultaneously, workers galled the soldiers and framed in large stone bedrooms, three baths and a kitchen. "The challenge was to make the bedrooms as large as possible," says architect Barbara Chambers, who worked in Dvornik for three months in various before-achieve. "With the living room in question, you didn't want to go upcycled and find time, cramped rooms."

In the final month, the pace quieted from speedy to blading to meet the television show's abbreviated winter production schedule. Jeff Dushan installed manager bathtubs; farmers Ming Sosa, Steve Lu and King Lau ran wire through Douglas fir studs; Devin Collins put up 7,000 pounds of rals, including a style used in the New York City subway.

With crews allowed to work, huddling in English, Cantonese, German and Spanish over the construction site, the site became a multilingual version of the Marx Brothers' steamroom scene from *A Night at the Opera*. "This is a seven-month job the way laid to finish in three and a half months, so we had up to 30 guys here at a time," says Plummer. Through it all, Plummer—who met Dwyer when they were both working for Ralph Lauren in New York City—remained affable and unflappable, making the crew work had jobs and drive situations when energy flagged.

For a chance to appear on the television show, many crews worked at lower-than-standard rates—but even so, overtime accumulated. At the wrap party, Richard Tiedelway exaggerated the laxer clubhouse by writing a fabulous schedule for DeWack and Bishop in the coming week: "Monday: Pay bills Tuesday: Pay bills Wednesday: Pay bills."

Still, the project came almost evenly to budget. Reopening the church cost just \$400,000, and the purchase price of the building was \$948,000. Some \$63,000 worth of donated goods and services still be found as income to Drenck and Boddy, adding about 130,000 to the center. The couple's cost-of-pocket total about \$878,000. "That's very close to what we originally committed," Drenck says, in effect, as if you can't have a huge mortgage can. "From the work that I do, I know the stress that comes along with any project like this, so that never threw me." Rebuilding a permanent, rather than temporary, vision had been Drenck's dream for years—and he enjoyed the endeavor. "It was fun. I really loved the whole thing." ■

A reverence for Bakara, Dinka gods, permeates successful songs in the 21 by-16-foot master bedroom, right, which includes a new fireplace. "We expected a lot of houses and enough furniture, so we made the walls clean, white and simple."

mulch makers

Chipper-shredders transform yard waste into gardener's gold



A chipper-shredder would make much work of this four-corner yard of yard refuse, creating mulch as fine as a wheelbarrowful of fine wood chips, ground branches and discarded yardings, empty trees, and large bark mulch piled during an ice storm.

BY WILLIAM G. SCHILLER
PHOTOGRAPHS BY MATTHEW BENSON



The biggest of the scene are chips, wood for the chips, the Mighty Mini 12PT-3, which makes mulch out of wood chips of yard debris. The pile, from left, are leaf mulch, wood chips and bark mulch.

The saplings lay where I had cut them a year ago when I cleared out a wooded area alongside the road to our house in Vermont. Behind the woodchuck-sized stacks of raspberry canes were cut stumps when we cleared the perennial garden, scraps of bark from last fall's firewood shipment and piles of leaves. All these heaps of surplus cellulose looked as if they were going to be rot-and-flower, growing in one sad straggles until they buried the house. Then one day, my wife said she was planning to buy mulch for the perennials. I asked that our property was virtually paved with the raw materials of mulch, free for the taking. All I needed was a chipper-shoulder.

Costs a food processor with a trash compactor. Then think in terms of all outdoors. That's the idea behind chipper-shoulders. These huge gasoline-powered machines greatly reduce the volume of garden and yard debris by fragmenting it so much. More mobile than conventional chippers, which are meant to be towed and are sometimes equipped by a power column to a tractor engine, chipper-shoulders are dual purpose, have their own engines and seldom pack more than 10 horsepower. The mechanism that does the chipping is a rotating steel disk with one or more blades projecting at a slight angle, like the cutting edge of an overhead chain saw. When a branch—which can have a diameter as large as 7½ inches—goes into the feeder, the blades usually sever the wood in a disk and whittle it into ½- to 1-inch chips. A separate hopper feeds the shreds, which decompose, decay, light plant material and organic kitchen waste with blades or swing up to mixer flaps or a combination of both. The shredder then forces the ground material through a screen or bar grate. The final product ends up in a disk collection bag or directly on the ground.

Picking a chipper-shoulder is largely a matter of deciding what kinds of work it will have to do and how often it will be used. Differences in horsepower are important when chipping is the primary function. A chipper powered by a 3-horsepower engine takes twice as long as an 8-horsepower engine to decouple a branch 2 or 3 inches in diameter. That's no big deal when there are only a few branches but could be a drawback after a big tree storm or a lengthy pruning session. Chipping blades should be made of hardened tool steel for durability. They should also be easy to remove for sharpening or some in the chips begin to appear over rather than chisel out.

When it comes to shredding, the size of the hopper doesn't matter much. Leaves, branches and other dense material must not only be cut only shallow through the throat, blades or hammer as a prescribed rate. The more cutting surfaces the better, larger machines come with as many as 24 hammers. Because the beamer edges will eventually dull, it helps to be able to reverse them to expose fresh, sharp edges.

Chipper-shoulders for home use have pneumatic or semi-pneumatic



The big Mighty Mule's shredder, pictured with its protective panel removed, attacks yard and garden debris with 24 rotating hammer flaps. Suspended from four cutting bars, the hammer rapidly turns branches up to 3½ inches in diameter into finely ground mulch.

The Magic of Mulch

A chipper-shoulder can make a great look better in a hurry, but the big payoff is the final product: fresh mulch. A layer of mulch spread 3 or 4 inches deep around perennials or trees—starting 6 inches from the trunk—helps retain moisture, prevents erosion, reduces the number of weeds and dandelion sub-invasions in the soil. A thicker layer, if it is 6 inches deep, will convert a weed patch into a fertile flower bed or vegetable patch. "With a year, and you'll have rich forest soil," says *The Old Farmer* magazine publisher Russ Murrell.

The most competitive and consistency of the mulch don't make much difference. Virtually any fresh mulch can be used anywhere in the garden, says Donald A. Bolen, a horticulturist and specialist at Cornell University in Ithaca, New York. He recommends distributing the mulch from a chipper-shoulder immediately or composting it to place and turning them periodically. "Or leave the pile low, as a source of organic carbon to be present," he says. "When large piles are kept in place for several months or more and not turned, the material can start to decompose unevenly, giving off nitrogen and alcohol that can be toxic to plants."

Fisher warns that using fresh weed-bearing mulch can temporarily reduce the nitrogen available to plants, and he recommends spreading 5-10-5 or 5-15-15 fertilizer on established beds before the mulch, apply Ming fertilizer at a rate of 1½ to 2 pounds of actual nitrogen per 1,000 square feet of ground. But Christopher J. Zarbuck, a University of Missouri specialist in woody ornamentals, says he heard that he didn't need to fertilize if he used ground hardwood as mulch, on top of the soil. "Just don't dig it in," he says. "When I tilled it in, I almost couldn't add enough nitrogen to keep the plants healthy."

Although mulched oak leaves and pine needles can make soil more acidic as they decompose, the effect is slight, Murrell says. Annual applications of oak leaves and pine needles will start the pH of the top few inches of soil by no more than .1 or .2, a difference that most plants can handle.

Preservative-treated lumber shouldn't go into the shredder hopper. Rather, should branches killed by fungal diseases Verticillium wilt and phytophthora collar rot can spread through mulch to healthy plants. A comparative extension office or a full-service nursery can recommend a lab that tests for these fungi. —Joanna Miller



Preserved bark often cut through a shredder leaves can make ideal for spreading around perennials or plants in some inches.

TROY-BILT

MIGHTY MAC 12PFS-E

SIMPLICITY

WHITE HAD-BULL

CUB CADET

MIGHTY MAC 12CSB6

LEAF CYCLER

wheels. Only the larger models have four, although I had little difficulty driving and moving even the heavier single-side models from place to place. If great leaf clearing is your focus, consider one of the self-propelled chippers. They can be pushed around a yard like all-terrain motorcycles, and they feature broad sweeps up front that suck up leaves and small debris. They have side-mounted chippers but no shoulder hoppers.

Most chipper-shoulders accommodate cloth collection bags for shredded material. On a self-propelled chipper-vac, the bag is an integral part of the system, collecting material like the rear bag on a lawn mower does. An attached bag isn't essential when a chipper-shoulder is used in one place, but a bagless machine has to be moved in shovels to get up housework.

Last summer, I tried out seven chipper-shoulders for The Old House, putting an assortment of mulch through their gears to see how handily they could devour and digest a bumper crop of leaves. Approximately 76 chipper-shoulders from 25 manufacturers are on the market. I chose a variety of sizes, prices and horsepower, not an conventional, manual-feed unit, but some on pneumatic tires. Most of the chipper-shoulders—a 7-horsepower Troy-Bilt, an 8-horsepower Simplicity, two 8-horsepower Mighty Macs and a 5-horsepower Leaf Cyclor—were noteworthy models equipped with wheels; the larger of the two Mighty Macs has four wheels, two on a pivoting axle, and a snow-blower option for attaching the machine to a garden tractor. Two self-propelled machines are nearly identical. Made by MTD under the names White Yard Boss and Cub Cadet and sold through different distributor networks, the pair of 9-horsepower units feature six forward and two reverse speeds for far-ranging debris-gathering capabilities.

Every model I tested handled chopping easily. My saplings, mostly birch and cypress for a post, went into the mow of each machine with no complaint. The big Mighty Mac, the most expensive machine, worked faster: 18 seconds for a 2-inch diameter tree 50 feet high. But none of the other chipper-shoulders were significantly slower except the little Leaf Cyclor, which will handle a comparable sapling as well under a minute.

Last shredding requires more patience. No matter how hungry these contraptions are, they can pick only so much out of their mouths at once. Even the heavier Mighty Mac, which features 24 reversible blades, balked when I put too many leaves in the hopper. The problem isn't power, the blades will spin in fast and truly at once. But if you pack in too many leaves at once, they start up almost the throat and don't make contact with the blades. The Simplicity, with its narrow throat, seems exact prone to back up. For John Bealder, a Simplicity engineer, explains that the constructed throat diameter is not designed to regulate the amount of material flowing toward the shredder blades. "By narrowing the throat, you don't get great big clumps that pull down the engine rpm," he says. "Also, we need to eliminate the chance that any material might lock back toward the operator's face."

MODEL	LIST PRICE	ENGINE	FEEDING RATE (CUBIC FEET/HOUR)	CHIPPING CAPACITY (CUBIC FEET/HOUR)	FEEDING RATE (CUBIC FEET/HOUR)	FEEDING RATE (CUBIC FEET/HOUR)	FEEDING RATE (CUBIC FEET/HOUR)
Troy-Bilt 4200	\$799	5-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr
Mighty Mac 12PFS-E	\$1,499	8-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr
Simplicity 4000	\$699	5-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr
White Bull 4200	\$699	5-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr
Cub Cadet 4200	\$699	5-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr
Mighty Mac 12CSB6	\$1,499	8-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr
Leaf Cyclor 4000	\$699	5-hp, 1800 rpm	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr	100 cubic ft/hr



Deck chairs, a hot oven, a grill and furniture are clunked all the way up to a second-story outdoor place for outdoor entertaining. Safely secured to the side of a house, such built-in double-ended railroad deck in Altapescopio, New Mexico, is strong enough to withstand a crowd.

building a **safe deck**

Is yours bolted to the house, or just nailed?

Betty Gerisch was nudging through a dinner-party crowd of Salvation Army members, aiming for a buffet table on the deck of a house in Atlanta one evening three years ago. Just as she and her husband, Robert, stepped through the door, she heard a loud crack and found herself falling through air. The deck had pulled away from the side of the house and collapsed, dumping 60 guests onto a concrete patio 18 feet below and scalding dozens of them in a torrent of overturned grills and chafing dishes. The scene "looked like a battlefield,"

BY CURTIS RIST

PHOTOGRAPHS BY ERIC O'CONNELL

repaired one firefighter. Ambulance planned the seven at a winter woman's helped people with broken pelvises, broken backs and third degree burns. Robert Gerweh, 77, a maintenance, suffered a head injury that would keep him in the hospital for six months. Henry Gerweh, 74, and fired a leather neck and a sword-pointed cut. "I fell on some furniture and crown plaster, and then everyone fell on top of me," she recalls. "I was conscious, but I didn't know if I hadn't been." "We would never sell again. Three years later, she remains partially paralyzed and unable to get around except on a wheelchair. "To thank that, in one instant, life can change to death," she says. "And all because of a badly built desk."

Decks are phenomenally popular in the United States. The

Statistical Association of Home Builders estimates they are included in nearly a third of all new houses, and decks are by far the most popular do-it-yourself home construction project. Yet structural failures that can bring decks down are frighteningly common. Although no one keeps statistics, "I'd say as many as 10 percent of the decks I've seen have serious design or construction flaws that could lead to catastrophic," says Bob Pinnau, a structural engineering consultant and a member of the American Society of Home Engineers. Moreover, deck collapses tend to occur just when the potential for injury is greatest: when a crowd gathers. Near Kalamazoo, Michigan, a 57-year-old woman was killed when a deck crunched on top of her several years ago while relatives again were meeting. "Happy Birthday," she said in 1991, as a stampede of 15 relatives from St. Louis, more than 100 miles from the Grand Old Dead Rock group were required, five at a time continually, when a crowd deck under which they had sought shelter from a thunderstorm broke away from a ledge. And in the New Jersey shore town of Manasquan, an outdoor wedding ceremony was disrupted when the deck collapsed as the bride and groom exchanged vows. (They consumed the ceremony in the emergency room, where doctors mistook most of the wedding guests, including the couple, who officiated.)

A deck can even handle the awkward jump of fraternity brothers as long as the beam that carries the floor joists is properly bolted to the side of the house. By contrast, virtually every deck that collapses has been poorly made or, Robert Falk, a structural engineer with the U.S. Forest Products Laboratory in Madison, Wisconsin, realized this while researching a deck-building manual five years ago: Falk had heard about the death of the woman in the deck collapse near Kalamazoo, and he wanted to find out the reasons for the failure. Using a database to search five years of newspaper stories from around the country, he found that nearly every collapsed deck had been attached with nails, rather than bolts, and that investigation had pointed the nails to the cause of collapse. "The owner, most can calculate, that nails will work," Falk says.



Whistleblower because of a stock collapse, Betty Gossell makes her way down a ramp built with some of the \$130,000 she and her husband, Robert, won from a court settlement. "I'm not better," she says of her situation. "But I now wouldn't want this to happen to anyone else."

the pressure, it's a different story." As people gather on a deck, their weight and movement translate into just one downward force that acts as a lever pressing the deck away from the house. Nails work well to resist the downward force but are no match for the outward force. Field in place only by the friction of bare wood fibers, nails tend to loosen when wood alternately shrinks and swells with changes in moisture content and temperature. Once nails loosen, they offer even less resistance to the prying force of a crowd. "There is no build in safety to brace with nails, no warning of a coming disaster," Falk says. "When they pull out, they pull out."

A screwed-in connector behaves differently. It gains increased tensile strength from

The weftline action of wood fibers along the outer length of the shaft is a lot like, what looks like a giant screw, but so much so that once the pullover resistance of a nail for every inch of penetration, folks say. It's not just the metal-to-metal connection of a true bolt, secured in a drilled hole and fixed with a nut on the other side. Placing a washer on both sides spreads the pulling force over a larger portion of the beam. "You'd get the whole structure apart before those bolts would pull out," Fols says. Both of these connectors offer an extra benefit over nails: They don't suddenly pull out as wood shrinks and swells. But they may loosen over time. If the deck is inspected annually, early signs of loosening will show up as a widening gap between the boards. "With bolts, they're more likely to stay a problem longer before your deck fails," Fols says.

Another critical step is to keep the connection between deck and house dry by adding flashing to drain water away. This will protect both the deck and the house. Holes made in the side of a house, even if filled with bolts, allow water to seep in. Jon O'Brien, who owned a construction company in Peachtree City, Georgia, recalls testing a deck of a 7-year-old house and discovering that water flowing in had rotted the house. "We literally had a 3-foot section rot so badly that you could put your foot hand through it," he says of the exterior wall. Flashing will prevent this, O'Brien says. He also advises squaring a double or sixt, such as sixtine, onto the bolts drilled for the bolts. "The connection will be watertight."

Even better, Falk says, is to avoid attaching the dock to the house in the first place. A freestanding dock, built on posts so that it is not supported by the house, always waters down to some extent, with the dock to the house. However, the posts need cross bracing to keep the dock from wobbling. The bracing goes in the way if the dock extends above a walk-out basement. "But that would be our recommendation is just about every case," Falk says. "From a durability standpoint, freestanding docks are the way to go."

Norman Koonin, the director of Aris's Bureau of Evolution.

know area of the ship when he looked into the deck collapse at the Salvation Army party. The cause, at first, perplexed him. For one thing, this was no rocky, neglected mooring. The deck, only 12 years old, had been both of non-rotary pressure-treated wood and seemed as solid as the Georgian mansion to which it was attached. The crew wasn't overboarded; another ship should have been able to support a cover twice its size. Searching the rubble, Koplon came upon a small section of the deck that had remained in place. He checked it carefully and found that it was attached with bolts. The collapsed section had been held on by a handful of 12d nails—11 inches long. Instead of driving the nails where they would penetrate the solid wood framing, the builders had simply hammered them into the surface of the deck, about 12 inches. The result was that the ship's deck ribs protruded to the inside, after the first rib of collision beyond it. "The wood displacement was supposed to be holding up the whole deck," Kaplan says. "This isn't anybody's idea of a safe connection."

In addition, the builders had skipped flashing. The wood behind the beams was rotting and rotted by osmium



Assured that anyone could have attached a devil by just nailing it into siding, Kapriel researched the recommended construction method. Thumbing through the Atlanta building code, he found a definition of a deck-lake hole: "I could not find a single substantial detail published on how a devil should be attached to a house," he says. "If you couldn't believe it." The lack of a code on deck holes was a surprise to Atlanta. Of the dozen or so building codes in the United States, only 10 of which are scheduled to be consolidated into a uniform code in the year 2000—most one with framing details to houses. "You're not going to find any prescriptive details relevant to the structure of a devil," complains Mike Vintler of the Building Officials and Code Administrators, International, which publishes the BOCA National Building Code. The proposed consolidated code doesn't cover the specifics either. Designed to be all-encompassing, it focuses on broad building requirements and

affers even fewer specifics than the current codes. Home construction manuals also are little help, judging by a review of 19 books with deck plans. Only one contained drawings showing all the details required to properly attach a deck to a house.

Many home buyers expect local building officials to ensure their decks are properly built, but this, too, is a risky assumption. Although nearly all municipalities require decks to be built "in code," many do not inspect home-owner or low-cost projects, often defined as those costing less than \$2,500. Bill Suter of Cow-Nik Builders Inc., in Nineville, New York, insists building a large beam in the Hudson River Valley for someone who later added a deck himself. "When done, it was obvious that the supporting members were too small. The building inspector noticed the flaw and ordered Suter to sign it down." When Suter explained the owner built the deck, not he, he let it go. Suter says, "It was okay if it was just someone's

der beste Freund ist.



Michigan, full during a party in 1993—drilling and mining officials were perplexed. Suspicion in

The Grivichs also turned into reluctant experts on building a safe dock. By the time Robert Grivich emerged from the hospital, his oncology practice had withered; he went into formal nursing. Forty-five years later, but that's gradual. Surgery restored her speech, she now meets her family freely, and her spirits are strong. "She's smart and alert, an achiever," Robert says.

"It's just a miracle that I'm alive," Betty says. To help her get around, the Gerschoes built a deck that leads down to the walkway in front of their house in Bloomfield Hills, Michigan. Betty's pedal of the way it's attached, with bolts, nuts and plenty of fishing. "This one doesn't worry me," she says. "Believe me, it's solid." ■



When the deck on this house near Kalamazoo, Michigan, fell during a party in 1992—killing a 17-year-old woman standing beneath it—building officials were perplexed. It appeared as if the house had fallen into place. A closer look revealed that the lag bolts—great screws—had penetrated only the sheathing of the house and were not anchored into anything solid.

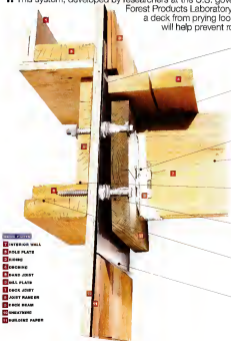
Inspecting Your Own Deck

To check the attachment between a house and a dock, go beneath it and look at the male beam: "If you don't see bolts and bending, it's because they're not there," says Tom Gatz, the building director for Pensacola City, Georgia. Adding lag bolts may make the connection more secure, but often either the beam or the house has become so rotten that it's better to replace them.

Clearly suggests climbing a postcard-like hill the heart and the wall; if the blade parameter is really, the wood is falling into the entire dark-to-beaten joint very much resembling: if the tree are in place but a gap at the joint appears, it could be a sign they are falling down—or even more attached to another structure in the first place.

Two Good Ways to Keep a Deck

- 1.** This system, developed by researchers at the U.S. government's Forest Products Laboratory, will keep a deck from prying loose—and it will help prevent rot.



HOW TO USE

1. BUILDERS PAPER
2. INSULATED WALL
3. JOIST PLATE
4. JOIST
5. JOIST JOINT
6. JOIST JOINT
7. JOIST JOINT
8. JOIST JOINT
9. JOIST JOINT
10. JOIST JOINT
11. JOIST JOINT

Attached to a House

2. Tom Silva's System



Adding a deck to a house in Lenox, Massachusetts, Tom Silva gets particular attention to the beam that connects the deck to the house and secures all the supporting joists. "It's where 80 percent of mistakes are made," he says. Silva secures a beam pressed tight against a house on top with a nail and a screw. Then, he cuts a gap for air with a saw.



error: Tom and his nephew Charlie Silva jockey the beam into position. After drilling through the top holes previously made, they drill into the house's joists and nail across the top hole. Through the lower holes, they insert a heavy anchor bolt into the concrete foundation.



error: For flashing, Tom uses an adhesive-backed flexible membrane made of polyethylene film and reinforced asphalt. Tom pre-drills it to metal flashing between its sticky surface makes a watertight seal around holes that penetrate the surface. Since the material could degrade in structural light, however, he makes sure to cover it with siding and decking. To prevent rot, Tom constructs the entire deck frame from pressure-treated wood. This wood is usually loaded with preservatives, but he works with a local office product treated with a safer preservative, A.C.Q. For the decking, he switches to cedar or redwood because he likes the look.

Task: Flashing under exterior siding. Use galvanized flashing, because copper will react with pressure-treated wood and corrode aluminum over time.

Use 1/2-inch-diameter bolts with nuts and washers whenever possible. For extra strength, insert two to four washers as spaces on deck beams can dry out.

Attach metal hanger with nails specified by manufacturer. To avoid penetrating flashing with long nails, either attach the hangers and hammer over the nail first before bolting the deck beam to the house, or switch to short, thick fasteners called hanger nails and reduce the load on each hanger as directed by the manufacturer—often by one-third.

Use pressure-treated lumber for joists and joists. There is an acetone-free type.

If the beam joint is not securely attached to the structural framing of the house, strengthen the connection before installing the deck board. Hammer old nails at an angle so they penetrate through the sheathing into both the beam joint and either the sole or sill plate. Space these nails every 8 inches.

After installing flashing, temporarily hang the deck beam in order to drill fast holes. Then secure the beam, repeat results in the future and immediately reposition the beam to allow to tighten the bolts.

Where access on both sides of the wall is limited, a 1/2-inch-diameter lag bolt may be used. It must reach at least 1 1/2 inches into solid wood inside the beam joint or studs. If the wall ends on the foundation, use expanding anchor bolts.

Extend the sheet of flashing below deck beam and lead the lip out over siding.

ACE

When you
don't exactly
have a
green
thumb...

see the
folks in the
red vest.

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BY JILL CONNOR PHOTOGRAPHS BY ANTHONY COTSIFAS

In the late Ice Age, 27,000 years ago, Paleolithic man used cattle ribs to tie the mammoth-bone walls of his house together. In the 1960s, middle-class men living in hurricane and tornado zones were Kevlar-wielding to tie the walls of his house to its foundation. Then—and now—rope has three defining characteristics: size, construction and diameter. With surface rope, the most sophisticated fiber and construction, the stronger and more expensive the rope. Synthetic fibers dominated in the late 1960s, nylon became the first to be made into rope; later, stretchy polyester and less-expensive polypropylene soon followed. Recently, fibers called high-modulus—scientifically formulated to be even less stretchy than steel cables—have been developed. Construction has advanced far beyond the basic three strands twisted together. Today stronger ropes have more and more strands twisted separately. For household use, ropes made of natural fiber, nylon, polyester or polypropylene can do just about any job: tie a handle of a sawcut, tie a boat's ear boom, tie a knot to a roof raft, high-modulus ropes—such as Kevlar, Spectra and Technora—have new roles in marine and industrial use every day. Because the twisting is gradually getting finer, the ropes (shown) are 10-inch-thick, but the strands represent a twisting level—actual fiber ropes, “Rope” means any rope, even those 10-inch-diameter ropes.

BOWLINE

The most useful knot. Fastens securely but can be broken easily, even under tension.



1) Make a single loop.



2) Pass the end through the loop from underneath, then around and under the standing part of the rope.



3) Pass the end back through the loop, and pull tight.

SHEET BEND

Useful for joining together two ropes of different diameters.



1) Make a loop in the end of the thicker rope. Put the end of the smaller rope under the loop, then over it.



2) Pull the end of the smaller rope under both pieces of the thicker rope, making a loop in the smaller rope.



3) Pull the standing parts of the two ropes in opposite directions and tight.

TWO HALE BITCHES

Good for all-around climbing.



1) Pull end of rope around post and make a loop around standing part.



2) Make another loop around standing part.



3) Group and pull two full thicknesses on tight.

SORTING OUT ROPES

iv: Tested polypropylene, the cheapest synthetic rope, doesn't hold a knot well; if you'll need a built-in knot in splices, buy it with one formed at the factory.

iv: Twisted nylon and twisted polyester, both stronger than polypropylene, hold knots well and are a better value than polypropylene for bed-downs or towing.

iv: Nylon rope stretches as much as 65 percent before it breaks, polyester as much as 40 percent.

Stretchiness can create a dangerous recoil when the rope breaks—so strong that the rope can burn or dismember a person.

Keep away from stretchy rope under explosive stress, such as when towing cars.

iv: Adults find 3/4- and 1/2-inch rope the easiest sizes to hold and tie.

iv: Ropes of high-modulus fibers can be 20 times as expensive as those made of other synthetic fibers.

They're worth the money only for special purposes.

iv: A single knot can reduce the strength of a rope by as much as 30 to 50 percent.

iv: For work on a steeply pitched roof, dynamic kammande is worth its price (a safety harness, belaying device and, most importantly, training, are essential). A local outdoor store can supply names of mountain-climbing guides who can train you in half a day.



Nylon rope stretches 65 percent before it breaks, polyester 40 percent. Twisted nylon and twisted polyester, both stronger than polypropylene, hold knots well and are a better value than polypropylene for bed-downs or towing.



POLYPROPYLENE

Twisted nylon and twisted polyester, both stronger than polypropylene, hold knots well and are a better value than polypropylene for bed-downs or towing.



MANILA



CURE FOR SPLIT ENDS

When you buy synthetic rope by the foot at a hardware store, marine shop or outdoor store, the salesperson will use a hot knife to cut and burn the end to keep it from fraying. This step is necessary because all good rope construction puts the fibers of the rope under tension when the rope is cut, the tension is released and yarns go flying. When cutting synthetic rope, lay it on a hard surface, use a sharp pocket knife and keep pressure on the hot knife and by gripping the rope firmly. Then, take it outside or lighter and hold it to the end long enough to melt the yarns. Do not burn the end of a natural fiber rope; it must be secured with waxed whipping thread or tape.





NYLON

through incentives, rate-of-return, etc. C&D has been awarded a contract to build and operate a 100-Mw gas-fired power plant in a portion of the city. The city is also planning to build a 100-Mw gas-fired power plant in a portion of the city.



DYNAMIC
KERNMANTLE

British polymer giant, made high-strength steel wire for these fasteners from 1966, ran a prominent display

of flowers, good ability to take honey, moderately pliable, unagitated. Works on a just barely through to both.

HIGH-MODULUS
POLYETHYLENE

low alcohol, and restricted, holds better and ideal for long-term use. For more information, a dietitian helped.



STATIC KERNAMANTLE

low alcohol, and restricted, holds better and ideal for long-term use. For more information, a dietitian helped.



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ASK NORM

"Phillips bits wear quickly, so it's worthwhile looking for hardened steel bits with ribbed tips for a better grip."

SCREWHEAD STRIPPERS

I've seen you use an electric drill and a screw bit on wood and drywall hundreds of times. But when I do it myself, I often find that the screwheads strip out. How can I prevent that?

(JOHN SEXTON, Kettering, Ohio)

Chop, soft-metal screws or a screw-out bit could be at fault. Phillips bits wear quickly, so it's worthwhile looking for hardened steel bits with ribbed tips for a better grip. There are several other causes of stripping, including failure to keep the drill bit firmly pressed to the screwhead and using the wrong-sized bit. But the most common cause is a failure to pre-drill holes for the screws. On a job site, I'll leave a bit chattering and I know immediately that someone has stripped a screw. I'll turn around to see a young carpenter struggling with a screw that isn't fully seated and can't be backed out either. My first question is always, "Did you drill pilot holes?" Inexperienced carpenters often assume that a power tool will drive screws without predrilling. Ordinary twist drills will do for making pilot holes, and some of these tools now have hexagonal shanks for quick switches from drill to ream. Special pilot bits are better. Many are graduated by screw size—number 4 fits for number 4 screws and so on—and they automatically coastaround for flathead screws.

SOFFIT STAIRS

We're replacing the asphalt shingles on our 23-year-old house. The aluminum fascia and soffit just below the roof are covered by either air pollution or runoff from the old shingles. We want to clean the aluminum before we replace the gutters and downspouts. But how? Once we finish cleaning up, what preventive measures can we take?

(BRENDA PARRA, Bridgport, VT)

Your soffit is under the eaves, so it shouldn't be stained by runoff. That leads me to suspect you have a leaking roof. If that's the case, your new shingles should remedy the problem. The staining issue may require a commercial house-cleaning product but, if you have any doubts, see an

ammonia-based household cleaner. Either can be applied with a stiff brush or gently power-washed, but be sure not to spray water directly into vents. The old aluminum probably needs painting because the finish doesn't last forever. Sand lightly, and prime any bare metal first. Finding compatible paints and primers is easy; just read the labels.

WINDOW SLIPPAGE

The windows in our 1962 house are giving us trouble. Most won't stay up. Some are hard to raise. And nearly all of them leak. We don't believe our windows are so far gone that they have to be junked. I have the time to do some work, and I'm handy with tools, so please tell me what to do.

(JOHN T. CAMP JR., Verona, Conn.)

One common type of window from that era features a sash that easily pops out for cleaning. On one side, spring-loaded bars in the sash match grooves in the frame; on the other, aluminum ribs in the frame fit into grooves in the sash. After cleaning both sides, adjust the springs with a screwdriver so the sash will stay up but still move easily. It's a fussy job, tricky to get right the first time. If you have spring-balanced sash, you can easily replace worn parts with inexpensive new ones. The third part in removing the sash: vertical molding strips forming part of the channel in which the sash slides up and down or covers the edge of the balance. Slip a thin putty knife between the strip and the frame then gently pry them free, inch by inch, to avoid knocking and chipped paintwork. And while you're at it, you might as well weather-strip the top, bottom and meeting rails.

JELLY CUPBOARD

My late father left behind an antique jelly cupboard that's going to be a lot of work for this novice to strip, repair and repaint, but I'm willing to try. Any suggestions?

(JOHN WILLIAMS-CORRY, Chicago, Ill.)

Refinishing destroys much of the value of antiques, so consult an expert to find out what you have. If the cupboard

is simply odd, rather than antique. Light sanding and feathering the edges where it's dropped may be all the preparation you need before repainting. "Old" paint usually means lead paint, so make sure you wear a dust mask and work outside with the exhaust on a disposable plastic sheet, and use wet sponge-type sandpaper or a sander attached to a vacuum with a HEPA (high-efficiency particulate air) filter. Sponging is rarely necessary unless you want it done the good guess. If that's your aim, check a hardware or paint store for an ecologically friendly stripper, and follow the directions on the label.



padding here and there. Your house may be a *faux* Victorian—there was a rage for do-it-yourself janking in the '60s—as you may be in luck. If the padding was applied with small tools or hands, it will be easy to remove. But if adhesive was used, the wall behind is probably ruined.

NEW PORCH

We have a nice 1870 Victorian that still has a good amount of gingerbread and detailing. Our previous owners did some modernizing and left us with a concrete porch. I guess they wanted something solid that would not rot, so this porch faces Long Island Sound. The nice cypress posts and brackets remain from the original porch, so we wonder whether wood can be installed over the concrete. We like the sound and authentic appearance of wood, and we don't like the feel of concrete under bare feet in summer. What do you advise?

DANIEL LARSEN, Springfield, Conn.

Installing wood over a concrete porch can be done, but it's a bad idea. It will change the height of the top step and threshold, producing dangerous trip hazards. You would probably end up replacing the steps too. For drainage, you would need 1/2-inch-thick sloped. They would run from the house to the end of the porch, making the floor at least 1 1/2 inches higher. And the floor still wouldn't drain as quickly very well, possibly leading to mildew and rot. Ify advice: Removing the slab will be a nightmare, so leave well enough alone except to consult a decorator for concrete tips on hiding your maintenance-free and rugged concrete.

RED-EYE SPECIAL

I've noticed that you use a chop saw with a red laser light guide, but I never see it advertised. How can I get one?

J.A. ROSSINI, Melville, Me.

That tool was an idea whose time hasn't come. After three years on the market, it was dropped in 1996. Although expensive—about \$350—the design was pretty basic compared to the fancy sliding and compound-angle cases that were introduced at about the same time. The laser had to be switched to the left or right of the blade depending on which side of the lumber was the waste side. Old pros who were accustomed to cutting by eye often forgot, and infuriating mistakes occurred. The Old House contractor Tom Silva has a laser-guided chop saw, too, and says he likes "everything except the laser. It's hard to see in bright light, and it can't be adjusted. It doesn't let me cheat a line when I need to."

WALL INSULATION

I'm in the process of renovating a two-story house that's about 100 years old. It has a large main and adequate second space. What's the best way to insulate my walls? Is it necessary to remove lath and plaster, or will blown-in insulation do? My plaster is in relatively good condition, and I am receiving mixed messages due to the lack of a vapor barrier.

PAUL KROGER, Upland, Ind.

Some people say blown-in cellulose doesn't work because it settles and there's no moisture barrier, but I've found no problems in projects I've checked after five or six years. Using vapor-barrier paint may save your mind, but a better idea is to avoid generating a lot of humidity. Too much air seeps (insulation is not airtight) and no exterior leaks. You might also consider insulating the walls with a modified-surface foam that expands after it's pumped into wall cavities. Originally used for new construction, this foam is now available for retrofit. We've used it on some recent project houses, and it seems to work well. It doesn't require a vapor barrier.

PANELS

Our older house was built when paneling was popular, and that makes our living room and dining room very dark despite two-story windows. We want to replace the paneling with drywall scenery, but in the meantime we'd like to lighten up the rooms with paint. What kind of paint would adhere well to wood paneling?

PAUL JOHNSON, Greeley, Colo.

Any product made for wood will work on wood paneling. A light scuffing with fine sandpaper will provide a little tooth to grip the primer. But first find out what's beneath the paneling. Removing the cover of an electrical outlet should tell you. It could be drywall or even plaster needing only a little

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A photograph of a modern kitchen interior. The floor is covered in a light-colored wooden laminate. In the background, there is a brick wall and a stainless steel double oven/stove. To the left, a dark countertop breakfast bar is supported by a metal stand, with three wooden stools underneath. One stool has a red shirt hanging on it. A bowl of fruit sits on the bar. A large window is visible in the background, and various kitchen items are on the counter.

Q.

A.

1. No, it isn't, although it's hard to tell just by looking.
2. It's called Pergo. It's laminate. Pretty amazing stuff.
3. Way more durable. Won't tear like vinyl, for instance.
4. Blue ink, red wine, dark chocolate. No problem.
5. Just sweep. Or damp mop after especially challenging recipes.
6. Yep, still beautiful years from now. And years after that.
7. A 15-year triple warranty. Wear-through, stains and fading.
8. Glad you asked. It's 1-800-33-PERGO, ext. 1016. Or stop by www.pergo.com.
9. Dealer names and a big, free idea book.
10. Limburger. (Be glad for that dome.)

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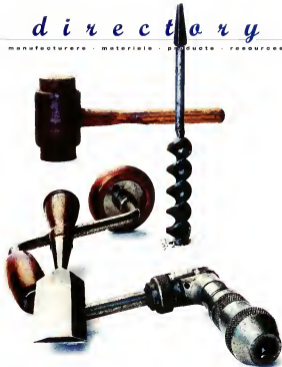
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PHOTOGRAPHS BY GARY HARRIS

Taken by Storm

The crew takes snow-blasted Massachusetts to replace a Miami hurricane casualty



Rig and remodel! The Evergreen project house in Lexington, Massachusetts, is the focus of the first episode of the new season of *This Old House*.

Week 18 (July 4-6)

Despite 2 feet of snow, the crew begins the project in Lexington, Massachusetts, on schedule. Steve Thomas and Mark Adams evaluate the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 17 (July 11-13)

While contractors begin the project, the crew begins the project house. **Watch and learn:** Installing a rough concrete slab.

The crew begins the project in Lexington, Massachusetts, on schedule. Steve Thomas and Mark Adams evaluate the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 18 (July 4-6)

The crew begins the project in Lexington, Massachusetts, on schedule. Steve Thomas and Mark Adams evaluate the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 19 (July 11-13)

In the great room, Jeff Hocking and the crew begin the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 20 (August 1-3)

On the last day of filming in Lexington, the crew begins the project house. **Watch and learn:** Installing a rough concrete slab.

The crew begins the project in Lexington, Massachusetts, on schedule. Steve Thomas and Mark Adams evaluate the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 21 (August 8-10)

In the great room, Jeff Hocking and the crew begin the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 22 (August 15-17)

On the last day of filming in Lexington, the crew begins the project house. **Watch and learn:** Installing a rough concrete slab.

Week 23 (August 22-24)

On the last day of filming in Lexington, the crew begins the project house. **Watch and learn:** Installing a rough concrete slab.

The crew begins the project in Lexington, Massachusetts, on schedule. Steve Thomas and Mark Adams evaluate the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Week 24 (August 29-31)

Steve Adams and the crew begin the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.

Steve Adams and the crew begin the project house. The crew begins the project on the great room window. **Watch and learn:** Installing a rough concrete slab.



ALABAMA

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WUG-TV
Sun 11:30 a.m., Sat 12 p.m.
Sun 12:30 p.m.

ALASKA

Denali
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Sun 11:30 a.m., Sat 12 p.m.

ARIZONA

Phoenix
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Sun 11:30 a.m., Sat 12 p.m.

ARIZONA

Phoenix
KATV-TV
Sun 11:30 a.m., Sat 12 p.m.

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"(Do it the easy way, a little scratch.)"

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A Guide to Resources for the "Classics" TV Series

An updated list of suppliers and manufacturers featured in *The Old House* projects in Lexington, Massachusetts, and Miami in 1992 to 1993

- Week 16**
Exterior Two (bookend)
 Cambridge Screen Co. 604-426-
 1410 5th Ave. (lower) 7th St.
 Maple Inc. 781-863-3844
Exterior Total for entire heater
 American 424-884-0300 **Plaster**
 Lark Plaster Supply Inc. 879-558-
 6440 Concrete refractor 16 Schlegel
 Industries Concrete Curing Service
 781-726-0570 Placed all piggins
Insulation 3300-MAC National Remodeling
 Universal Insulation, Schlegel Products Co.
 800-325-7387 **Kitchen cabinets**
 Century door panel 420-828-8241
 Inc. 800-861-3911 **Kitchen designer**
 Dore Design Associates Inc.
 879-555-8833
- Week 17**
Dimensions Roger Haglins,
 MEASURE, Garden 879-443-9573
Garage 3300-MAC Concrete
 Plaster 421-286-1300 **Lighting**
 designer Melissa J.H. Caswell
Plumbing 3300-MAC Concrete
 Plaster & Plastering Supply Hudson
 879-555-8833 **Radon testing**
 Shuler Corp. Bedford MA 800-375-
 2727 **Roofing** 3300-MAC Concrete
 Plaster Products Inc. Bedford MA
 800-325-7387 **Roofing** 3300-MAC
 Plaster Products Inc. Bedford MA
 800-325-7387
- Week 18**
Carpet 3300-MAC Concrete
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- Week 19**
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- Week 20**
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